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ABSTRACT

This monograph contains four position papers and two conference papers from the Systemic Evaluation Project (fiscal year, 1984) on the methodological issues associated with applying a comprehensive information system in a secondary school setting. These papers represent work in progress at a suburban Los Angeles high school field test of systemic evaluation methods. The feasibility study is being carried out by the Center for the Study of Evaluation with the Laboratory in School and Community Relations. The four position papers are: (1) "Contextual Influences in Developing a School-Based Comprehensive Information System," by Donald W. Dorr-Bremme; (2) "The Use of Survey Data in Comprehensive Information Systems for Local School Improvement: Purposes, Practices, and Problems," by Leigh Burstein and Kenneth A. Sirotnik; (3) "Making Sense Out of Comprehensive School-Based Information Systems: Exploring Analyses and Reporting Methods for School Staff," by Sirotnik and Burstein; and (4) "Distributive Processing Issues in Education Information Systems," by Philip B. Ender. The conference papers are: (1) "Information Use in Local School Improvement: A Multilevel Perspective," by Burstein; and (2) "Using vs. Being Used by School Information Systems," by Sirotnik. (BS)

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SYSTEMIC EVALUATION PROJECT

Comprehensive Information Systems for Local School Improvement: A Reality-Test in Secondary Schools

Co-Project Directors

Leigh Burstein & Ken Sirotnik

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INTRODUCTION

The six papers in this monograph constitute the four proposed deliverables for FY 1984 of the Systemic Evaluation Project plus the two papers delivered at the 1984 conference of the American Educational Research Association in the symposium "Comprehensive Information Systems for Districts and Schools: Ingredients, Uses, and Misuses" organized by Ken Sirotnik and Leigh Burstein as part of this project.

As stated in the CSE Institutional Prospectus 1984-1985 (February 29, 1984, p. 10), a series of position papers was planned on methodological issues associated with applying a comprehensive information system in a secondary school setting. The specific issues to be addressed were as follows:

1. School's organizational context surrounding the initiation of improvement efforts.

2. The collection of survey data to augment the existing system and the problems that arise in integrating it into the system.

3. Data analysis and report formatting enhancements that make the system more accessible and meaningful.

4. The results of a technology audit of the hardware, software, and human resource issues as part of the activities of examining issues involved in making the information system an on-line, user-friendly adjunct to decision-making at the school level given the exigencies (equipment, personnel, perceptions, priorities, costs) of data processing capabilities in the district and the school.

These issues constitute the foci, respectively, of the first four papers in this project report.

It should be noted that although one or two authors (as listed) took primary responsibility for writing each report, all CSE staff on this project have worked together and contributed to all phases of the effort. Furthermore, these papers represent work in progress and, as such, must be considered preliminary in light of the data and experience to be gained during the coming year.

Nonetheless, the work represented in these reports constitutes substantial progress in coming to grips with practical concerns that arise when working within the realities of schooling. This work, therefore, when modified and augmented by the data and experiences derived during FY 1985, will constitute the core of the FY 1985 deliverables. In addition, the clinical-social perspective on information selection and use -- a theme that pervades these reports -- will provide a fifth focus for FY 1985 deliverables.

Contextual Influences in
Developing a School-Based Comprehensive Information System

Donald W. Dorr-Bremme

INTRODUCTION

The purpose of this paper is to identify and examine some social contextual factors that impinge upon a school's development of on-going, systemic evaluation for instructional decision making. The data for this analysis come from the case study of a "reality test" of such a system now under way in a suburban, California high school.

The paper begins with a brief description of the school district and school in which this effort is being conducted, a succinct review of the model of systemic evaluation being tested there, and an outline of the reality test itself. It then describes and documents several social phenomena that contextualize this effort and goes on to suggest how each appears to influence the school's response to systemic evaluation.

All this should be construed as a progress report, rather than a list of findings. The reality test (or feasibility study) has been in progress one year and has another year yet to run. Nevertheless, both experience and related research suggest that the issues identified thus far in the project are important ones and that they tend to arise in many school districts which are engaged in efforts to develop instructional information systems.

The Setting

The reality test of systemic evaluation is being conducted at Site A in the Valley Unified District* on the fringe of the Los

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* A pseudonym

Angeles metropolitan area. The District serves an enrollment of about 25,000 students, who come from a socioeconomically diverse community.

Site A is one of two high schools in the District. Among its 2,000 or so students, approximately 85 percent are "Anglo"; the rest are Hispanic, Asian, and Black. School authorities estimate that 8 to 10 percent of Site A's graduating seniors go on to attend four-year colleges or universities, another 20 to 30 percent attend a local community college.

The school prides itself on offering a full range of advanced placement courses, a rich curriculum, successful athletic programs, and a wide range of other extracurricular activities. Educators at Site A and in the District, however, express some concern that Site A graduates may not be pursuing post-secondary educational and career opportunities concomitant with the quality of school programs.

While in most ways neither Site A or the Valley Districtare unusual, some special resources and programs make them propitious settings for a trial of the systemic evaluation concept.

One distinctive feature of the resources at Site A is the presence of a computerized individual information system. CASA (Computerized Accountability for Student Achievement) is a computer-based student information management system which provides counseling staff and assistant principals instantaneous access to a wealth of information stored on each student. Through this system, counseling staff and adminstrators can access such student-level information as standardized test scores for multiple years (including information prior to entry to high school); proficiency testing information (from the District's Computer Managed Instruction program,

which monitors student progress in Grades K-10 through the use of CRT's based on District continuum); curriculum and performance information including courses taken, credits, grades and class rank; background information including parental occupations, family size, census tract location of residence, and ethnicity; current school status information including eligibility for special programs (Gifted and Talented, Bilingual, Special Education) special school activities (athletics, school paper, etc.), complete attendance history and referrals to various school services (psychologist, health office counselor and guidance office, principal, etc.).

The CASA system was developed with Title IV-C funds. The system is currently being augmented through state school improvement funds targeted to the development of a computer-managed Career Magnet School (CMS) program. CMS seeks to align student career interests with competencies with specific courses at Site A in which they may be obtained. Over the past year, teams of teachers have been developing the list of skills associated with given courses in the school and an analogous list required for each career program. (Careers Magnet schools are first broken down into career paths such as computer technology and then further into programs such as computer technician, operator, programmer, or designer). The skill-to-course and skill-to-career matches are being computerized so that counseling staff can develop courses of study for students choosing particular careers and monitor their progress at obtaining prerequisite skills.

CMS is one of two efforts recently instituted at Site A that are directed at career and academic decision making. The other, the Learning Resources Center (LRC), offers students and teachers academic

resources (materials, assistance) for remedial and advanced work. These two programs appear to be guided by a general concern that students do not have the necessary information and skills to attain post-secondary education and careers they might want. The implicit assumption is that by providing students with more information about career opportunities and their necessary prerequisites (CMS) on the one hand, and resources for remediating or enhancing their academic performance (LRC), on the other, that students will make better decisions about how to benefit from their high school experience and be better prepared for their future.

Thus, Site A in the Valley Unified School District offers a setting with a wealth of relevant information already on file and a sophisticated system already in place to make that data accessible to at least some Site A personnel. It is a setting in which a few key figures had, before the advent of the current project, a keen interest in information for decision making. With these advantages, project staff have reasoned, if systemic evaluation cannot become viable in a setting with these advantages, it probably cannot become viable anywhere.

Aside from its promising technology, however, Site A and its district provide a typical suburban setting. There is reason to believe, therefore, that the kinds of issues, concerns, and enthusiasms that surface during the reality test here will be generic ones -- germane to circumstances in many other schools and districts.

The Systemic Evaluation Model

The model or conceptualization of "systemic evaluation" that is in trial at Site A has been outlined by Sirotnik, Burstein, and Thomas (1983). Among its key assumptions or features are the following:

1. Outcome indices have limited value, beyond their immediate descriptive signal, for helping direct an agenda for school improvement.

2. A necessary requisite is relevant information on the circumstances, activities and sentiments associated with schooling process.

3. The criteria of relevance are based upon the perceived needs of the significant "actors" in the setting (e.g., administrators, teachers, students, parents) and the inherent value systems through which these perceptions are filtered.

4. Information gathering as knowledge production has several crucial and interrelated features:

   a. It is operationalized with a multi-method approach to data collection (e.g., survey questionaire, interview, anecdotal and structured observation, document and archival records).

   b. It is conceptualized and analyzed from a multi-level (e.g., individual class, school, district) perspective.

   c. It embraces multi-inquiry paradigms (e.g., empirical analytic, naturalistic/interpretive and critical-dialectic).

5. Information as knowledge is not an end in itself but is, instead, a catalyst for evaluative discourse and action; systemic evaluation must, therefore, be legitimized as a natural and on-going part of the daily work life of those for whom the knowledge is to be relevant.

Underlying these principles is a view of the school as a cultural/ecological system. Renewal of that system comes about ideally, the model suggests, through:

> a process by which the circumstances, activities, and meanings [of the school as a system] come to be understood and acted upon by people to whom it is relevant... [the renewl process] is people actively and continuously engaged in the systemic and rigorous deliberation over any and all

> information seen to be potentially relevant to school improvement (Sirotnik, Burstein, & Thomas, 1983, p. 35).

As all the foregoing should indicate, the model or conceptualization is not a blueprint or recipe for what to do, but a set of principles that can guide local developmental efforts. Thus, the "reality test," or feasibility study, was undertaken to learn what happens when educators in a school environment actually attempt to follow those principles toward development of sytemic evaluation.

The Reality Test to Date

The systemic evaluation field test is being carried out by the Center for the Study of Evaluation in collaboration with the Laboratory in School and Community Relations, both of UCLA.

While examining the viability of the systemic evaluation concept is the broad goal of reality testing at Site A, there are more specific objectives as well. In particular, the project strives to explore and work toward resolving methodological issues that arise. In view of the nature of the model, two types of methodological issues are of central interest. One type can be called technical; the other, social.

Technical issues include problems, concerns, and solution strategies that arise in developing methods to generate multi-method, multi-level data; to integrate that data technologically (e.g., in computer files) such that it can address locally relevant concerns; and to display that data in ways that different user groups find understandable and utilizable. (A paper that accompanies this one addresses some of the technical issues that have emerged so far).

Social issues include the problems, concerns, and solution strategies that surface in developing social organizational arrangements -- arrangements for identifying "significant actors" in the setting; structures through which these actors can articulate their information needs and viewpoints on the formatting of information; forums and procedures that facilitate consultation and use of the information; and arrangements for maintaining the entire evaluation-and-renewal system.

By identifying and beginning to work through these issues during the field test, project staff hope to gain information that can help other schools and school districts develop their own versions of systemic evaluation more smoothly and efficiently.

To date, CSE project staff have worked closely with school and district personnel to carry through the initial stages of this reality test. A working group including the Site A principal, other school administrators, and a five teachers has met regularly with project staff. During the course of these meetings, Site A personnel have begun to articulate their information interests and needs, to shape and revise a survey of student perceptions and attitudes, and to specify ways in which the student survey data and other information already in district files can be integrated and displayed for maximum utility. Three reporting formats have evolved. A "Student-At-A-Glance" form (including survey data, grade point average, attendance and test-score data on each learner) has been designed to accompany the class list each teacher receives at the beginning of a semester.

A "Class-At-A-Glance" form for each class provides graphic summaries of each class' perferences among different types of learning activities, as well as their overall feelings about the class subject. Finally, a "School-At-A-Glance" form highlights in graphs and prose a set of issues that the working group deems worthy of consideration by the entire faculty and staff.

At the district level, project staff have examined the current district information files and have begun to develop (with district data-processing staff) ways of integrating the data in those files with the new survey data. Negotiations among project staff, district administrators, data processing personnel, and the school principal have been aimed at securing continued district support for the reality test effort and for its maintenance when the field test ends. District officials have reaffirmed commitment to the project, and they have become increasingly interested in its data-integration and data-reporting dimensions.

At present, the project has several immediate goals. One is to refine the "At-A-Glance" forms and present them to all school faculty with actual data for their classes. A second goal is to present issues summarized in the "School-At-A-Glance" report to the entire faculty and staff in a forum which allows for their initial discussion. A third goal is to complete revisions of a teacher survey form, administer it to the whole school faculty, and integrate those data with information from the student survey and extant district information in ways that school staff believe will be helpful. These goals will entail continued cooperation with the District office, especially the District's data processing group.

And as these steps unfold, project staff will gather new insights into the technical and social methods that can facilitate the realization of systemic evaluation.

Throughout the project, one staff member has been documenting the course of event -- contextual features, trends in thinking, meeting-by-meeting discussions, etc. -- in a nearly verbatim way. The 600 pages or so of field notes collected this far have allowed UCLA staff to reflect on the direction of events over time. Ultimately, this case study will provide a record of what has been learned.

The project also gains perspective on events in the field-test setting through recurrent meetings with another CSE effort (the Management of Instructional Information Systems, or MIIS, project), which has been studying and continues to investigate information systems in other school districts.

This brief sketch of the reality test to date provides background for the description and discussion of some key contextual issues that have emerged so far. As that discussion proceeds, there will be references to and elaboration upon this outline of past and present activities.

ISSUES AND OBSERVATIONS

Four general features of the district and school context are described below, together with their implications for the development of a comprehensive information system at Site A. These are (1) the current status of the extant district-school information system;

(2) Site A teachers' clinical perspective on information and the features of school social organization that support that perspective; (3) faculty-District relations as they impinge on the development of systemic evaluation; and (4) the nature of District support for the Site A - UCLA project. While these topics are treated separately in the pages below, it will soon become clear that the phenomena discussed under each heading are quite interdependent.

The Current Status of the Valley-Site A Information System

As noted above, Site A has and is continuing to develop a computerized student-information management system. Referred to as CASA (Computerized Accountability for Student Achievement), this system was in place before the systemic evaluation reality test began. One might imagine, then, that CASA served to break ground for the development of systemic evaluation at Site A: that it familiarized Site A staff members with the advantages of easily accessible information for instructional planning and decision making; that it generated enthusiasm for and sophistication about information systems and their use; or that it led to technological and organizational procedures, upon which systemic evaluation could build, for accessing and using information. In fact, however, the presence of CASA has had little discernible impact to date on Site A's progress toward comprehensive, systemic evaluation. A brief review of CASA's history and current status reveals why; it also underscores some of the conditions necessary for instructional information systems to be useful and utilized.

Like many educational information systems (Bank & Williams, 1982), CASA emerged from the interest and enthusiasm of a very small group. One Site A assistant principal championed the idea of accessing the District's huge data base for instructional planning at the school level. She took the initiative in CASA's creation. Later, as the Career Magnet School (CMS) concept evolved, this same administrator saw CASA's potential for facilitating it. Together with the Site A improvement program (SIP) coordinator, she wrote the plans that secured state SIP funds for linking CASA with CMS. (Refer to page 4 above for details.) A few others in the high school's central office, counselors and administrators, offered their support and suggestions as the present CASA system was developed. Evidence suggests that no faculty members were involved.

Thus, CASA was in no sense a response to a schoolwide interest in instructional information systems, in no sense a product of schoolwide demand for better or more easily accessible information about students. Among Site A's faculty and staff in general, no such interest or demand was expressed. Furthermore, with one exception, the few central office personnel who promoted and developed CASA did not seem to think of it as a schoolwide innovation. Certainly, there was no schoolwide planning to inform its design.

As it was originally intended to be, CASA has been used primarily by counselors and assistant principals. They draw upon it as they advise students on academic and career paths and as they handle referrals of students with individual problems.

CASA is also available to classroom teachers. Any member of the faculty can go at any time to the central office, where one of the school's administrative assistants has been designated to process their CASA requests. Through her, they can obtain information on individual students or class groups in any of a wide variety of standard report formats. (For a list of some of the data available through CASA, see page 4 above.) Nevertheless, all the evidence available reveals that very few teachers have made use of this opportunity. The following excerpts from the project's case study field notes document, and suggest some of the reasons for this phenomenon.

NOTE #1 (February 22, 1984). The first working-group meeting of the new project year is under way. Five teachers, an assistant principal, the school improvement coordinator, and the administrative assistant who coordinates CASA requests are present, together with the UCLA staff. Discussion has been following the first three items on the agenda prepared for the session by UCLA: "(1) Identify the kinds of information teachers, counselors, and building administrators view to be useful for their work... (2) Identify what specific problems (at any level) Site A staff would expect the information system to help them address; (3) Ascertain level of understanding of the computerized information currently available to the school staff..." The teachers present have mentioned many kinds of information they feel would be beneficial to them: whether students in their classes have course prerequisites, students' past grades in their departments' courses, students' reading level, students' writing ability, and students' vocational goals. At this point, UCLA project co-director Leigh Burstein observes that nearly all this information is currently available to teachers on one of the standard CASA report forms known by the acronym ARF (Activities Referral Form). A foreign language teacher in the group responds, "I didn't know we could get that." Other Site A faculty in the group murmur their assent. Leigh Burstein describes the Activities Referral Form in more detail. The foreign language teacher asks, "Now why haven't we heard about that. That sounds very good." One or two other Site A staff members agree. A member of Site A's English Department replies, "I think we did hear something about that. Wasn't there -- I think there was, uh, a presentation in a faculty meeting last spring about it." Someone else from Site A adds, "Oh, I remember that!" The Math Department chairperson comments with a chuckle, "It certainly made a strong impression, didn't it?"

NOTE #2 (February 29, 1984) . The second working-group meeting is in progress with the same group members as in the first session a week earlier. The principal, however, is in attendance this time. Site A staff members in the working group have produced lists "for items to be printed on one sheet of information, to be distributed to teachers one time per semester (one sheet per class)," as one group member has labeled her list. The suggestions on each list, which represent group members' own ideas and those of colleagues with whom they have spoken during the past week, are now under discussion. As the foreign language teacher finishes presenting her suggestions, the following exchange ensues:

Health Teacher: "It seems to me, um, isn't this just computerizing the cum. folder and information card?"

Math Department Chairperson: "Well, it seems to me part of the problem is that all the information people want isn't in one place. It's in several locations. This would bring it together."

Health Teacher: "Well I don't know that. I don't know where all this information is. I don't even know what questions to ask to get the information I want."

Math Dept. Chair: "You don't know whether to ask for an ARF or a RALPH or... (general laughter). I'm not sure I do, either.

Health Teacher: "That's it. That's it exactly."

Later on in the meeting, discussion again returns to the ARF, or Activities Referral Form. UCLA staff have distributed an example of one ARF to the group.

Leigh Burstein (UCLA): "So far ARF is holding up pretty well. this information, the information we've been talking about, is in there. But the display issue will show up, because you want lots of information and it's not going to be easy to get it all clearly on one page."

Ken Sirotnik (UCLA): "This format [holding up the ARF] is too dense already. That may be why it isn't used."

Assistant Principal: "Well, it's quite new, too."

English Teacher: "No, he's right [holding up her copy of the ARF.] And it has to be in English. With all these numbers and codes, what have you -- it won't work like this."

Several others from Site A's staff nod and vocalize their assent.

NOTE #3 (May 23, 1984). A student survey developed by the systemic evaluation working group is about to be administered in classrooms throughout Site A. To prepare the way for this, UCLA staff are spending the day meeting with small groups of Site A faculty. During each period of the school day, those teachers with no assigned class meet with UCLA staff in a corner of the Learning Resource Center. There, Ken Sirotnik explains the history and purposes of the sytemic evaluation effort in general and the student survey in particular. He also answers teachers' questions, listens to their reactions, and outlines procedures for administering the student survey. Nearly every teacher in the school, plus some of the counselors and assistant principals, makes an appearance in one of the six sessions. In all but one of the six, there is considerable discussion and the exchanges are (in the jargon of international diplomacy) "frank."

Throughout the entire day, despite the fact that many of Sirotnik's remarks in each session could easily "cue" teachers' to think about CASA, only one teacher makes any reference to the CASA system, ARF, or any currently available information on students.
Ken Sirotnik (during Period 4, finishing his initial explanation of the project and the rationale behind the student survey): "So, we will report the information back to you, and we may do so in several different ways that you can use, depending on what your colleagues who are working with us suggest. But I guess before I go on, now would be a good time to talk about issues you want to raise, and to hear your comments."
Teacher: "You should know that we don't have a good record on getting information back. I was looking for correlations for my class on that [CASA] request form from [the administrative assistant who handles CASA requests]. I haven't gotten it yet. I think it's been over a week."
Sirotnik: "Well, there may have been problems there, and that's one of the things we're working to avoid..."
Teacher: "OK. I'm just pointing out that what we have is -- it's not accessible now."

These incidents strongly suggest that the CASA information system is neither well known now widely used among faculty at Site A. They give life and support to a comment dropped casually during the course of one meeting (with District personnel, on February 8, 1984) by the Site A administrative assistant who handles CASA requests. "We haven't been getting a lot of requests from teachers," she said. Indeed, the notes above suggest that this remark is something of an understatement.

Faculty members in the Site A-UCLA working group -- people who demonstrably have a special interest in information that can help them in their work, who care enough about obtaining such information to give their time to the project, and who volunteer that they would like to have some of the information now available in the CASA system -- could not recall even hearing about CASA's availability. In the course of meetings with small groups of teachers, meetings in which each time teachers heard a description of a project very similar to

CASA in some of its goals and paticular features, no one asked, "Don't we have something very similar to this?" or "How is what you're talking about different than what we can get now?" Surely they would have done so, amidst the frank discussion that occurred, if they were aware of CASA. Given many teachers' expressed concern with the time costs and ultimate value of "one more survey," this seems especially likely.* Finally, we have the administrative assistant's report (confirmed by District data processing personnel) that few teachers have called for CASA reports. All of this indicates why the presence of CASA has done little to pave the way for the development of systemic evaluation at Site A. CASA has, by and large, remained extrinsic to the professional lives of nearly all of Site A's faculty.

It is not difficult to account for this state of affairs. Pieces of an explanation are threaded through the brief history and field-note excerpts provided above.

First, and probably most importantly, nothing was done at Site A to build teachers' investment in CASA or to assure that CASA information and report formats responded to teachers' needs. There were, as we have seen, "good reasons" for this. CASA was not construed as a schoolwide organizational innovation. It was developed as a convenience, a technological short cut to facilitate central office and counseling functions. Teachers were told about it after the fact, rather than involved in its development. (Furthermore, within the flow of information that teachers constantly encounter in faculty meetings, this "telling" was evidentally not an especially salient event.) Thus, all the recent work on innovation and

dissemination in educational environments -- work captured in such buzz words as "stakeholders," "ownership," and "mutual adaptation" -- helps to explain why CASA has not "caught on" throughout Site A.

Second, there is evidence that the formal features of CASA (as opposed to its content) do not strike teachers as immediately appealing. Working-group members, viewing the ARF report apparently for the first time, found it unattractive and hard to read (Note #2 above). At least one teacher who requested CASA data found that he did not receive it promptly. Such shortcomings as these can be traced, at least in part, to the absence of faculty participation in CASA's development. They may also be factors in the limited teacher use of CASA.

A third factor, not addressed in this account so far, may also have contributed to CASA's general confinement to the central office and to counseling tasks in particular. Teachers at Site A seem to take for granted that the functions of counselors and the functions of classroom teachers are generally quite separate. Thus, some teachers seem to feel that teachers need no more information about students to perform their roles. As one put it after hearing Sirotnik's explanation of the project in the small group meetings (Note #3 above):

> I don't claim to understand all this but it seems idealistic. This is going to be a great tool for counselors, but I don't see how I can use it as a teacher.

What is more, teachers on more than one occasion have expressed frustration with the operations of the counseling office. Near the very outset of the working-group meeting described above in Note #1, for instance, as teachers were voicing some of their information needs off-the-cuff, one teacher said:

> Let's get specific here. There's some things going on in the counseling office that are just very hard to understand. For instance, I teach social psychology, which is supposed to be a required course. But there is a procedure to waive the requirement. I'm interested in whether the kids who're having it waived aren't the ones who really need that course. How can I get that information? I assume they have it in counseling, but how can I get it? Then, I get kids who're actually in the class who're on the waiver list...

This remark set off a chain of anecdotes from other faculty in the working group about anomalies in course assignments and counseling decisions. The episode only concluded when the original speaker quoted above suggested that an information system should "kick out anything unusual, like the IRS computer does with tax returns, because obviously they're not doing this down there [in the counseling office]." To this, there was general agreement in the group.

These and similar events indicate that in Site A's informal social structure, a boundary that is only semi-permeable marks off teachers and their concerns from counselors and theirs. This boundary, it appears, is reinforced by some strong teacher feelings about the quality of counselors' work. In the experience of this author, such a boundary is hardly unique to Site A; similar divisions exist in many American high schools. Nevertheless, its apparent presence at Site A may well have truncated the teacher- counselor communication through which information about CASA and its benefits might otherwise have been shared. The informal networks for such communication seem to be absent, and many teachers appear to believe that what is good for counselors is not necessarily advantageous for teachers.

This analysis of the history and current status of Site A's current information system provides some insights into the social milieu that surrounds the development of systemic evaluation at Site A. Principally, it should make clear that despite the existence of a relatively sophisticated information system at Site A, most Site A staff are neither enthusiastic nor sophisticated about instructional information or information systems. Furthermore, it should help to demonstrate that the social-organizational structures implicit in the systemic evaluation model described earlier have not yet been built at Site A.

Viewed in broader perspective, the account in this section begins to show that for all practical purposes, there is nothing special about the current status of information and information use at Site A. Most districts and schools do much less than they could with the evaluation and assessment data they have on hand (e.g., Bank & Williams, 1981; Dorr-Bremme, Herman & Doherty, 1983). Those that routinely and systematically link it with instructional planning or school improvement are the exceptions.

The next section of this paper explores how teachers at Site A think about information and their information needs under these, very usual, curcumstances. It also suggests how some of Site A's organizational arrangements support these ways of thinking.

The Clinical Perspective and School Social Organization

The concept of systemic evaluation that is generally guiding the Site A reality test (as outlined above, pages 6 to 7) places considerable emphasis on the social uses of information.

Information use by individual teachers and others is certainly included as part of the evaluation and renewal process. Nevertheless, information is viewed expecially as a "catalyst for evaluative discourse and action" (Sirotnik, Burstein, & Thomas, 1983, p. 4). The renewal process is construed as "systematic and rigorous deliberation over any and all information seen to be potentially relevant to school improvement" (p. 35). Such statements as these not only call attention to the importance of the social uses of information in the systemic evaluation model; they also reflect its commitment to a holistic renewal process. The school is viewed here as a cultural/ ecological system. Its parts are conceived to be interdependent. Thus, it is ideally the entire system upon which renewal efforts focus. This means that information use toward renewal is necessarily a social process, in which all relevant actors engage.

Especially in light of these ideals, it is important to note that Site A teachers do not routinely or easily think of information in terms of its social uses. Rather, they tend to approach information and their information needs from a clinical perspective.

Two hallmarks of the clinical perspective, according to sociologists of applied knowledge, are its orientation toward action and its emphasis upon the individual case. Elaborating on these points, Homans (1950) explained:

> Clinical science is what a doctor uses at his patient's bedside. There, the doctor cannot afford to leave out of account anything in the patient's condition that he can see or test. It may be the clue to the complex... In action we must always be clinical. Analytic science is for understanding but not for action.

Noting with Homans that the aim of the clinical practitioner "is not knowledge but action," Friedson (1970) adds that "the clinician is prone in time to trust his own personal first-hand experience" and to be "particularistic," stressing the uniqueness of each case to be treated. The "clinical rationality," Friedson (1970, p. 171) concludes, "is particularized and technical: it is a method of sorting the enormous mass of concrete data confronting [the practitioner] in individual cases."

It is the clinical orientation as defined here that characterizes the thinking of Site A teachers participating in the systemic evaluation reality test. Their central interest is particularistic. They want to know primarily about "this student" or (secondarily) "this class"; rarely do they manifest spontaneous interest in knowing about the students in "this school," or even those in a given department or program. They require that information be relevant to action, recurrently asking "What can I do with that?" and declining to gather information because "I can't do anything with it." In particular, they seek information that supplements, and helps them sort and clarify, the plethora of personal, first-hand information they gain about particular students and class groups as they interact with them.

The project to date has gathered a wealth of data to substantiate these generalizations. Only a small portion of it will be reviewed here.

NOTE #4 (Febrary 22, 1984) . Leigh Burstein (UCLA) has opened this first meeting to discuss "what information you'd like to have available" by underscoring the many levels at which data can be aggregated to address needs of different types. He mentions "information for or on specific programs" and calls attention to the importance of data for "constant monitoring at the school level -- course enrollments, drop out rates." He expands on his belief that information at the school level can help in the "planning and design, in studying the impact of new programs you want to start... In my view

this is what an information system should do." Two hours pass and the group takes a break. Up to now, none of the teachers mentioned anything except information they'd like to have on their individual students and classes. The assistant principal, in a brief comment, has expressed interest in "a graph that makes attendence very visible, that would show the match with time of day, day of week, neighborhood grid. This would help in working on attendence with neighborhood organizations and elementary schools.

The group returns from the break and continues to discuss information on individual students and classes. As the 3:30 p.m. time for drawing the meeting to a close arrives, Burstein again encourages the Site A participants to consider "measuring school climate issues" and the "on-going monitoring" functions of a comprehensive evaluation system. He assigns each working-group member to come into the next meeting with a list of questions or issues (1) the kinds of things [information] you need for your students, classes, departments and so on or; (2) the kinds of things you'd want to collect at the school level on an on-going basis." The meeting ends with no further discussion of school-level information.

Despite considerable prompting to consider other levels of data, then, teachers in this initial meeting framed their discussion of information needs exclusively in clinical terms. Their interest were in data on individual students and particular classes. And despite Burstein's assignment in preparation for the next meeting a week later, that meeting too focused almost exclusively on clinical information needs.

NOTE #5 (February 29 1984). The meeting opens with a discussion of the foreign language teacher's list of desired information. (Refer to Note #2 for context.) The list focusses on individual student characteristics. Ken Sirotnik (UCLA) then asks for other ideas.
Social Studies Teacher: "I was talking to the people in my department, and the most important thing people want to be able to do is to see what their class is like, so they can group kids for cooperative learning, so they don't assign work that's beyond the kids' level, things like that."
Ken Sirotnik: "There's not some other information that you, as a teacher, think is more valuable...?"
Social Studies Teacher: "Sure, there's lots of information that's valuable. And sure, I can wait for the class to begin and see the kids work, and then I get that information. But what they want, what we want is for the beginning of the semester, when you don't know your kids yet."
Sirotnik: "Would they want students' GPA [grade point average] in the general area?"
Social Studies Teacher: "No, people didn't want to get that specific. What you need to know is what level are kids reading at? What are their comprehension skills? How well can they write?"

English Teacher: "Yeah, just a rough picture. You can modify it once you start working with them."
Assistant Principal: "You wouldn't want their GPA in the general area, as Ken was suggesting?"
Social Studies Teacher: "No, but I'd like to have their grades in particular English classes. That alerts me to the kinds of success they have. It tells me not only how well they're doing but the kinds of strengths and weaknesses."

A few moments later, the foreign language and social studies teachers turn to explaining some of the value of background data on idividual students.
Social Studies Teacher: "What we need is information that lets us respond to the kid who says, when you give them the assignment, 'I can't read five pages.' you want to be able to go to your list [a single page with information on each student in the class] and say, 'That's not what this tells me. You're reading scores show you can do this...'"
Foreign Language Teacher: "Right. 'And it says here [gesturing to imaginary information sheet] you have no job; you're in a college prep program, so I don't see a problem.'"

Still further on in the meeting, UCLA staff try to turn discussion away from information on individual students and classes and toward consideration of school-level data needs. Sirotnik, for instance, argues that information on students' preferred "learning methods and strategies" would need to be "content-free if it's to be useful schoolwide." Three teachers immediately respond that (as one put it) "you can't ignore the subject matter if this is going to help us plan our classes." Burstein suggests that you could bank questions on instructional practices as part of an on-going effort to track "the health of the school." As an example of such questions, he points to a Study Of Schooling survey the group is using as a stimulus for ideas. The agree-disagree questions listed there include such items as "The teacher gives me too much work to do in this class"; "Students know the goals of this class"; and "The teacher tells us how to correct mistakes in our work." Burstein explains that these could be asked about "the teachers in this school in general," instead of about particular teachers in particular classes, as in the original. Site A teachers reply that this information would be seen as "too threatening" if gathered about individual teachers and that "it wouldn't be useful to anyone" if students answered about teachers in general. Teachers fears are discussed, and the meeting ultimately ends with no further discussion of school- or program-level information.

These transactions demonstrate the persistence of teachers' clinical thinking. As in Note #4 above, the Site A teachers in the working-group and the colleagues with whom they spoke simply could not independently generate suggestions for data that would be worthwhile at the school level. Here too it is evident that they want

information that can help them make sense of and respond to individual cases: information for planning their class; information for responding to the student who says "I can't read five pages"; and so on. Furthermore, they want this particularistic information at the beginning of the semester. Once teaching and learning are under way, they will have additional information on students from their own experiences with them. This information will allow them (as one teacher maintains) to "modify" the general view of the individual learner that they can obtain from test-score and GPA data. Thus, the clinicians' tendency to trust personal, first-hand knowledge comes through, as well, in these conversational exchanges.

The clinician's action orientation is evident in all the above, but it is especially apparent in the following.

NOTE #6 (April 3, 1984). The group is working its way through student attitude surveys originally used in the Study Of Schooling research, selecting items and issues that seem likely to generate useful information that can be tied to the District's huge data file. About twenty minutes have gone by when the group turns to a set of agree-disagree questions headed, "Relation to Other Students." Among the six items are such statements as "I'm popular with kids my own age" and "It's hard for me to make friends." Introducing their consideration, Ken Sirotnik (UCLA) explains that they "cluster to yield a score which you could call 'self-concept toward others.'" A debate erupts about who would use this information. The foreign language and health teachers maintain they're not interested. "I wouldn't have any need for that," says the former. Leigh Burstein (UCLA) argues that this data could shed light on the school-wide attendence problems "you've all been concerned with." He also notes it could be used in an on-going monitoring of the health and climate of the school. Ken Sirotnik adds, "The question here may be not so much what you're going to do with this in your class, but what's a whole faculty going to do if they find many students have a low self-concept, there's attendence problems at the same time. Shouldn't they know that?"
Health Teacher: "Look, what I'm saying is who uses this? If I were starting a school, I might want know this, but who is there right now?"
Social Studies Teacher: "I think the counselors might want it. I'd want it if I were a counselor."
Foreign Language Teacher: Even though I didn't choose these, I have no objection to asking them.

Math Dept. Chair: "You could use this for longitudinal monitoring, though, like Leigh has said, couldn't you?"
Burstein: "I hope so."
Health Teacher: "That seems like we're just collecting information for the sake of collecting information."
English Teacher: "No, I think this could really help with the 'Track A' kids, in confluent education. I'd want to know how my students feel about themselves."
Discussion passes on without a consensus.

Soon attention turns to a set of questions that elicit students' view of the quality of the school's "physical plant." Everyone agrees this is within the administration's purview. The issue of whether to include these is resolved when one teacher says, "Let [the assistant principal] and [the principal] decide if they want it."

Near the end of the meeting, a set of questions about why students elect the classes they do is examined. Several teachers point out that since the school administration has just made decision to limit students' choice of classes, this information is irrelevant. "We can't do anything about this," the social studies teacher reasons. Burstein again raises the importance of considering the value of this information in a longitudinal sense," but the teachers end up rejecting the items as useless.

As noted above, the views expressed in this excerpt highlight the action orientation of the clinical perspective, as manifested in the concerns of Site A teachers. Together with the other field notes excerpted and transcribed here, this helps to document that Site A teachers do indeed approach information and their information needs from the clinical perspective.

There is nothing especially surprising in this finding. Teachers across the nation seem to adopt a clinical stance in seeking, interpreting, and using data about students (e.g., Dorr-Bremme, 1983). Nevertheless, the account presented here suggests that a substantial gap exists between teachers' routine ways of thinking about information, on the one hand, and, on the other, the way systemic evaluation principles posit that they should. This gap is currently an important part of the context in the development of systemic evaluation at Site A. What is more, if the national data just referenced are accurate, it promises to be a key contextual factor in many schools and districts.

While Site A teachers perspective on information is a particular kind of perspective (a clinical one), it also has certain generic features. Like members of other organizations, teachers at Site A are interested in information that has "theoretical or practical import for organizationally relevant purposes and routines" (Garfinkel, 1967, p. 191). It simply happens that, given the social organization of Site A, the only organizationally relevant purposes and routines for teachers there are clinical in nature, i.e., taking action toward individual students and class groups. At present, the school maintains no regular organizational structures that bring staff members together and empower them to discuss and resolve common concerns.

As most high schools in the United States are, Site A is organized into various academic departments. Department meetings occur, but they apparently do not consitute settings for dialogue and conjoint decision making. When Burstein suggested that some type of survey data might help departments plan their curricular emphases, faculty in the working group rejected the notion immediately. One teacher explained that "everyone sort of sidesteps disagreements over teaching methods and philosophy and things" during department meetings. Another added that departments meet infrequently and usually deal only with what courses individual members of the department want to teach, what books they want to order, and similar routine tasks. In another working group session, Burstein asked whether "your departments" could use information on students' perceptions of instructional practices. After some initial confusion

about what Burstein had in mind (several Site A participants asked in apparent disbelief, "Why?" and "For what?!"), one teacher answered, "No, this would be seen as threatening." The matter rested there.

Site A, as noted in passng earlier, participates in the California School Improvement Program (SIP). SIP guidelines require schools to assemble a school site council which includes the principal and elected representatives of various constituencies: teachers, other staff (e.g., counselors, non-certified personnel), parents and other community members, and students. According to SIP provisions, the site council has responsibility for assessing schoolwide needs, developing improvement objectives, planning activities to meet them, and evaluating the results of these efforts. SIP Schools are encouraged to engage in comprehensive planning and to use the planning process as a catalyst to or motivator for dialogue and involvement. Some schools do so, but many treat the planning process merely as a hurdle that must be jumped in order to procure additional state monies (Dorr-Bremme, et al., 1979). Site A seems to fall in the latter category. Several discussions of Site A's SIP program during working-group sessions suggested that a few administrative leaders have primary responsibility for SIP plans. Thus, the SIP site council does not appear to provide a forum for substantial teacher involvement in schoolwide planning and decision making. Similarly, other Site A instruction-related programs (the Career Magnet Schools and Learning Resource Center programs, for instance) appear to be the artifacts and concern of a few key administrators.

More generally, role boundaries are relatively well defined at Site A. Teachers teach; counselors advise students, help them plan their programs, and deal with special problems; administrators set policy and concern themselves with schoolwide issues. That faculty members currently tend to accept and cooperate in sustaining these boundaries should be evident in some of the remarks quoted earlier. (Teachers referred the decisions on whether to gather certain student attitude data to counselors and administrators, for example. See Note #6.)

It is not the case, then, that teachers are simply predisposed to see information and their information needs from a clinical viewpoint. Their clinical perspective is in fact supported by the organizational arrangements within which they operate each day. Those arrangements provide no occasion for using information socially; they generate no need to consult school-level information. Thus, when teachers consider the marginal utility of new information -- when they implicitly and explicitly address the common organizational question, "Will it have been worth the cost to gather this data?" -- the criteria they employ and the decisions they make reflect the practical contingencies and exigencies they face on the job (c.f., Dorr-Bremme, 1983; Garfinkel, 1967). They can use additional information to operate clinically in the classroom. They cannot use information for anything else.

It follows from this analysis that Site A's organizational structure is every bit as important a contextual influence in the development of systemic evaluation there as teachers' clinical perspective is. Indeed, this analysis suggests that the two are interdependent. Other CSE/UCLA research supports this view. In

studies of testing-evaluation-instruction linkage systems in school districts, Bank and Williams (1983) found that organizational supports for information use and teachers' attitudes toward information tend to evolve together and be mutually supporting.

Faculty - District Relations: Conflict and Trust

The current status of the CASA information system, teachers' clinical perspective on information, and the organizational arrangements that help sustain the latter are aspects of the school context that have already begun to influence the systemic evaluation field test at Site A. Now, attention turns to contextual factors which promise to influence the field test in the immediate future. One of these, discussed in this section, is the demeanor of the faculty at large toward the evolving systemic evaluation innovation.

Recall that to date only a small number of Site A faculty and administrative staff members (the working group) have been intimately involved with the project. The remainder of the faculty has participated only tangentially in two ways. First, they attended small group meetings during which the systemic evaluation project's history and goals were described. (See Note #3 above.) Second, they administered a student survey during one class period.

Soon, however, the faculty and staff at large will begin to play a much more important role in the project. On November 7, they will attend a three hour faculty meeting devoted exclusively to the

systemic evaluation project. During that meeting, they will review and react to the "Student-At-A-Glance" and "Class-At-A-Glance" forms developed by the Site A - UCLA working group. They will also examine four key student-survey findings incorporated on the "School-At-A-Glance" reporting form and begin to consider whether these merit schoolwide action. (These forms are described above on pages 8 and 9.) A teacher survey will be administered later in the year. And, assuming continued District support, all teachers will receive Student-At-A- Glance and Class-At-A-Glance data for each of their classes at the beginning of the second semester in the present school year. Faculty reactions to the systemic evaluation project as a whole will soon become extremely influential in the course the project takes. The responses of teachers throughout the school will also, of course, contribute significantly to the learnings that the reality test has been designed to engender.

Under these circumstances, it is especially important to ask, "What is the present outlook of the faculty? How are they now inclined to view activities of the type that systemic evaluation, as developed at Site A, is likely to entail for them?"

With respect to the kinds of information teachers in general are most likely to find interesting and relevant, there is every reason to believe that viewpoints of faculty members in the working group are likely to be broadly representative. This is also true of the formats in which they are most likely to find that information appealing and useful. As noted earlier, working-group teachers have tried to speak, at least in part, for the faculty at large. On at least one occasion,

they elicited the views of others in their departments (see Note #5 above). Thus, the particularistic, clinically oriented information presented in the concise, Student-At-A- Glance and Class-At-A-Glance forms seem to be reasonable "first draft" products to offer the faculty as a whole for their review.

At the same time, however, working-group teachers recurrently caution that their perspectives are not shared by all faculty members. Some, they point out, have no interest at all in survey information on students' feelings and viewpoints. As one teacher explained during a working group session:

> I'm interested in what students like to do in class and what methods work best for them, but I don't think all faculty would be interested in this. Many of them would say, "when the bell rings, I'm going to close that door and teach what I want to and the way I want to based on what I think is best.

On another occasion, during a working-group discussion on the value of gathering data on students' views of teachers' helpfulness, a different member of the working group opined, "There aren't probably ten people throughout the school at this time who care anything about that."

Even such "hard" data as test scores showing students' reading level and writing ability, teachers in the working group warn, is not of universal relevance.

> If I were to ask the question, how many teachers will use this, I'd have to say, well a small number. You've got to remember there are 93 teachers out there and in some areas -- in PE, horticulture, and some others -- they don't concern themselves with this stuff.

In short, working group teachers emphasize, as one might expect, that every faculty member will not be interested in a given type of information about students and some may not be interested in any student information at all.

But the particular information preferences of Site A teachers are less important, at this point in the project's development, than their general stance toward the project and its data collection and reporting activities. To engage in dialogue with UCLA staff and Site A working group members, to be willing to give the project their time, Site A faculty and staff must first believe that some kind of data collection and reporting activity can be worthwhile. Put another way, they must be more-or-less convinced that the benefits of a project such as this one can be worth the costs -- the time and energy they will have to invest in it. It appears that at present not all Site A's professional staff are.

During their initial introduction to the project in small-group meetings on May 23, 1984, a notable minority of teachers voiced doubts that benefits would come from the systemic evaluation effort. Such doubts seem reasonable in light of the experiences they report, as the following quotations from participants in the May meetings reveal.

- There were four surveys already this year. We never saw the results of any of them.

- When [the new principal] was here [for a visit] last spring, he gave us a questionnaire. Has anyone seen the results of that?

- You'll find your facing a negative atmosphere here. The teachers have been "statistized" to death. This [student questionaire] is just one more survey. There has been no follow up from the district on any of them yet.

- We gather a great deal of useless information here already... As long as the teachers is powerless to act on the information about students, then it all just disappears in quicksand. It's more frustrating than anything else if you can't do anything with it.

- I know you [UCLA people] need this for your professional careers; it's nothing personal, but many teachers have had too much of ed. school people who do research and then run off and give boring lectures. And who does it help?

While these remarks explicitly express skepticism about the benefits of any data collection enterprise, implicitly they also reveal concerns about costs. As yet another Site A teacher explained during the May 23 meetings:

> It's not just you, but you're one of 900 separate projects with demands... We've had Students Against Drunk Driving, substance and drug abuse projects, and each one got their time in my class.

Still others who spoke up in the small-group meetings worried that the data would be invalid, negative, and bad for the faculty. "You're going to get automatic reponses on this," one explained to the UCLA speakers. "The majority of kids will respond in very negative ways that they may not really feel." Said another, referencing changes in school policy and procedures under the new principal, "This is a year of change and it's a bad time of the year, too. It guarantees negatives." Yet another argued:

> We have a history of being told the results of everything in a way that points out our weaknesses. The kids have just been taking tests, and regardless of the results, they'll find fault with us somehow. What they'll say about our way of giving tests will be negative.

"If this gets out," warned still another teacher, "it's going to just be more fodder for the press to condemn us with."

Working-group teachers, who participated in the May small-group sessions with their colleagues, attempted to put all these negative initial reactions in context for the UCLA staff. Faculty morale at Site A, they explained, was very low in general. More specifically, working group teachers went on, many teachers were afraid that the data would be used against them. Recent events in the District were at the root of all this, they added.

It seems that during the 1982-83 school year, the Valley Unified School District felt impelled to reduce the number of faculty it employed districtwide. Even some tenured teachers had to be let go. Teachers found the Districts "riffing" (or reduction in force) procedures highly unfair. Within-district transfers that accompanied the staff reduction, they maintained, resulted in teacher assignments "that make no logical sense."

Part of the "riffing" process involved the use of information. According to one teacher, the 153 district faculty members listed for possible lay-off,

> were all checked out. They [District officials] were looking at projector use. They figured that teachers who were showing a lot of films weren't teaching. They considered people's academic qualifications to teach subjects, their classroom control, anything that would justify cutting them. So all this [student survey] information -- well, there's some specific feelings of mistrust.

Later on, in the 1983-84 school year, contract negotiations between the local teachers' association and the District reached impasse. Teachers felt not only that the District's firm salary offer

was unsatisfactory, but it was extremely unreasonable. This situation aggravated the wounds opened by the reduction in force, leaving teachers feeling beleagured and unsupported. Problems that might otherwise have been interpreted by teachers as petty, bureaucratic inefficiencies came to be viewed as evidence of the District's disregard for their professional status and needs.

Whether all the comments quoted above reflected this state of affairs is problematic. It is probably reasonable to assume that some did, as the working-group teachers maintained. Furthermore, other faculty members' comments in the May 23 meetings made these links explicit.

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NOTE #7 (May 23, 1984). The Period 2 small-group session is under way. Ken Sirotnik (UCLA) has explained the project's aims and elicited reactions. Many are negative.
Social Studies Teacher: "Part of the reaction you'll be seeing all day lies in the fact that we're in the classroom, we need supplies, materials, support of this kind and we're not getting it. Administrators are going off to meetings, intellectualizing about new educational ideas, but we can't get what we need to do our jobs."
English Teacher: "I have a college prep class, British Literature. There are books we need to read, which I ordered ages ago. They haven't arrived on time. How am I supposed to teach literature without books?"
Social Studies Teacher: "The anthro. books I ordered in September for this semester haven't arrived yet."
Second Social Studies Teacher: The same thing has happened with my global geography text. There are the problems we face, the practical day-to-day things. What am I going to do with more information?
English Teacher: You're dealing with a very embittered staff. There's conflict between the teachers and the Hill [the District office]. Teachers here have been mistreated."
Later, in the sixth period session, a teacher echoed these themes. "Why should we get excited about information systems, "he asked rhetorically, "when the District can't even order me my books. This [student survey] will just tax an already over-taxed system."

By rough count, 68 Site A faculty and professional staff members attended the six small group sessions held on May 23 to introduce the systemic evaluation project and its student survey. Thirty three

(about 48%) took the floor to address their group and UCLA participants in particular. And of those 33 who spoke, 19 (roughly 57% of the speakers and 28% of the staff in attendence) articulated one or more negative comments of the types quoted above. Nine others asked questions that can be construed as neutral in tone, e.g., "Are there standard procedures for administering [the student survey]?"; "What should we do if the student doesn't know his CMS [Career Magnet School]?"; "When will you have the results back?" The remaining five speakers (including two members of Site A - UCLA working group) offered comments which can be interpreted as positive toward or supportive of the project in general or the student survey in particular, e.g., "Some of these questions look interesting"; "I can vouch for Ken [Sirotnik of UCLA]; I've worked with him before. He'll follow through."

These simple counts should help to put the discussion in this section -- and the demeanor of those at Site A toward the project -- into clearer perspective. Initial responses toward the project were universally enthusiastic. Faculty attitudes toward systemic evaluation activities are, apparently, mixed. Previous experiences have generated skepticism about the value of data collection, as well as resentment toward yet another activity that takes time away from the central business of teaching and learning. The District administration and its creations (and this project can be interpreted as one by Site A staff) are viewed with antipathy and suspicion by many. All of this provides a challenge for the development of systemic evaluation at Site A. It is a challenge that can be met only in part by

presenting the faculty and staff with relevant information at relevant times in appropriate formats. Equally important, if not in fact more fundamental, is building an environment of greater trust and cooperation in a social system where mistrust and antagonism have recently been more common.

While this section has focused upon the initial attitudes of Site A faculty toward the systemic evaluation project and its reality test activities, it has shown some connections that appear to exist between those attitudes and the doings of the District administration. The next section examines the role of District leaders more explicitly and cites some reasons why their role is important in a school-based innovation.

The Nature of District Support for the UCLA-Site A Project

The last section began by suggesting that teachers' demeanor toward reality-test activities is one contextual feature that bears on the future of systemic evaluation at Site A High School. The nature of the District administration's support is another. In order to understand the present status of that support and what it portends for the project, however, a bit of background is necessary. Thus, the discussion below opens with a brief review of the school and District commitment to the systemic evaluation reality test. Then, it moves on to consider how and why the District's commitment to the project is likely to impinge upon systemic evaluation's future at Site A.

The systemic evaluation reality test has had consistent, strong support from the Site A administration. The new principal (who assumed his position in September of 1983 and is now in his second year) appears to be enthusiastic about the project's potential. He has taken the lead in securing release time for working-group teachers to participate in the project. He agreed to devote class time to the student survey and has scheduled the planned, three hour faculty meeting to examine the "At-A-Glance" reporting forms and survey results. Despite a very busy schedule, he has attended all but one or two working-group meetings and several meetings among UCLA staff and personnel in the District office. Furthermore, he has expressed interest in the student survey findings, made suggestions for how they can be useful schoolwide, and cited them in support of several policies and decisions. The principal also has committed himself to involving the faculty as a whole in examining andacting on schoolwide issues that project data help to make evident. All of this demonstrates his continuing support for the development of systemic evaluation at Site A.

The assistant principal who championed the CASA system and acts as a member of the working-group is another key figure in the school administration's commitment to the project. A second assistant principal has become increasingly interested in systemic evaluation activities through recent months.

In its commitment to project activities, the school administration has been generally reinforced by administrators at the District level. The Superintendent of the Valley Unified School

District involved it in a network of schools usually called The Partnership, sponsored by the UCLA Laboratory in School and Community Relations. It was through Partnership connections that the Valley District and Site A were identified as promising settings for the systemic evaluation reality test. The systemic evaluation concept appealed to the Superintendent, and he welcomed the project.

The District's Assistant Superintendent for Instructional and Support Services is the Superintendent's designated contact for project issues. He has said on several occasions that building a comprehensive instructional information system "is something I've always wanted to do." With the Assistant Superintendent's approval, release time from the classroom for working-group teachers has been made possible, student surveys have been printed, survey data have been tabulated, and the District's information on students have been make available to UCLA staff. His approval of these activities testifies to District interest in and support of the systemic evaluation idea and reality-test activities.

As the 1983-84 school year ended, the Assistant Superintendent affirmed the District's continuing "commitment" to the project. Ratifying that commitment, he promised approval of extra pay for teachers to join in a two-day working-group meeting in September of 1984, just before the official opening of the new school year.

There is reason to believe that the Assistant Superintendent's interest in the systemic evaluation effort is more than nominal. During a meeting on September 27, 1984 to review project progress and

products (the "At-A-Glance" forms and student survey data), he expressed enthusiasm with the forms. He became involved in an animated discussion of survey findings. He also suggested other, school-level data that would be helpful to the District and to school counselors. When the head of District data processing suggested that some of this information was already available, the Assistant Superintendent replied:

> I know you have it but the problem is to get it into a form like this, a form that's easy to read!

He then went on enthusiastically to suggest various ways in which project designs and concepts could be adopted by the District for its information needs.

The District's data processing personnel were equally affirmative in their reactions to the "At-A-Glance" forms and the information they contained. The director of the data processing unit, who often worries aloud about his need to keep information and produce information and produce reports "that nobody really wants," commented:

> The thing you [UCLA] guys did was go out and find what people wanted. That's what's important... This is, this is a pretty nice report!

He added that the junior-high-school counselors "would like this" and was soon immersed in a discussion of the techical prerequisites for producing the At-A-Glance reports on a routine basis.

Thus, key District personnel have manifested genuine interest in the substance and products of the joint Site A - UCLA project. They have commented with some enthusiasm on their potential for wider use in the District. Together with their limited-but-important financial

support (for survey duplication, data processing time, and substitutes to release working-group teachers from their classroom), this interest promises on-going commitment to the reality test, if not to systemic evaluation itself.

Other events, however, blur the portrait of District support painted so far. First, the Assistant Superintendent equivocated on his commitment of extra pay for working-group teachers to attend the planned, early-September meetings. According to the Site A principal, he suggested in early August that the funds for this extra pay could come from a special state grant the school was hoping to win, but added that "we'll find some way" to compensate them for their additional work time. Later in August, a phone call to the principal revealed that the Associate Superintendent had not yet formally agreed to such compensation. The principal delayed inviting teachers to the two-day September meeting pending a District commitment to compensation. Plans to expand the number of teachers in the working group were also delayed. In yet another phone call to the principal three days before the scheduled meeting in September, he reported, "I don't know about compensation. I think we have some money here in the school that will cover [the teachers'] lunch." Ultimately, the meeting took place, but for four hours instead of the scheduled two days. The working-group was not enlarged; only the administrators and four of the five faculty members who had been working with the group all along attended. Given the ambiguity surrounding the compensation issues, it seemed inappropriate to increase the group's size or to ask

teachers to donate more of their time in the days just before school opened. The state grant application (mentioned above) was not successful. No District funds were forthcoming.

Second, during the September 27, 1984 meeting cited earlier, the Assistant Superintendent maintained that "there's no extra money" for various District office work in support of systemic evaluation. UCLA staff and the Site A principal had explained their interest in developing and administering a teacher survey, using District data programmers to produce "Students-At-A-Glance " (and possibly "Class-At-A-Glance") forms for all Site A teachers' second semester classes, and continuing working-group meetings with ten faculty members rather than the present five. The Assistant Superintendent was most concerned, in the absence of "extra money," about the costs of release time for teachers and the level of effort District data programmers would need to invest. "My feeling is," he said, "we've invested time in this and we should go the next step, but we can't omit the fact that we don't have a lot of bucks." In the end, the Associate Superintendent requested the director of data processing to give him "an ideal of how much time this will take. If it's two months of two programmers' time, maybe we can't do it." He also directed the Site A principal "to come up with an estimate of the release time" for teachers that the project would require through the 1984-85 school year. "I'd like to go to the Cabinet with the whole package, but I need to tell them what it would cost."

These time-cost estimates were subsequently provided, but by mid-October no response from the Assistant Superintendent on any of these matters had been received at Site A or UCLA.

Third, the ambiguous nature of District support for the project demonstrated by these events may be part of a larger pattern. In the veiw of several persons with whom UCLA project participants have spoken, the District administration has a tendency to let schools do whatever they wish, but to drop projects once the extra District monies or outside funds for those school-initiated projects are gone.

In overview, then, District support continued to be quite solid through the 1983-84 school year. As the 1984-85 year opened and UCLA staff made a tactical decision to encourage the District to assume greater responsibility for systemic evaluation, however, the nature and extent of that support became less clear.

The foregoing account should demonstrate that a districts' support for a school-level innovation is subject to on-going negotiation. As circumstances at the district level evolve, priorities change; new demands on district resources arise. Earlier "commitments" to particular projects need to be re-examined by district administrators in light of changing circumstances. At the same time, school personnel cannot always specify in advance exactly what a development project will require in terms of district support. UCLA participants were careful to detail what, in general, the project would require of the Valley Unified School District and Site A. Release time for teachers throughout the reality test was mentioned. So, too, were data processing time and clerical support (for duplicating surveys, etc.). But until longer-term plans and particular data

collection and reporting procedures emerged from the developmental process, no one could say with precision just how many teachers would need to be released from class assignments for how many hours, how many pages would need to be duplicated by what deadlines, or how many District programmers would need to work for how long in support of the project. Thus, just as changing District political and economic circumstances open the door to renegotiation of levels of support for a given innovation, so too does the evolution of needs at the school level in any formative or developmental project. There is nothing especially unusual, then, in the sequence of events described above.

Considered in broader perspective, the nature of District support is likely to be a key contextual factor in the long-term maintenance of systemic evaluation at Site A.* The support and collaboration of both school and district leadership tends to be critical in the maintenance of innovative educational programs (e.g., Berman & McLaughlin, 1977). This holds true when the innovation in question is an instructional information system. Bank and Williams (1981, 1983), for instance, have studied a small number of school districts that have made unusual advances in linking testing and evaluation data with instructional planning and decision making. In none of these cases

*In the short run, UCLA resources through the Center for the Study of Evaluation from the National Institute of Education and from the Laboratory in School and Community Relations will sustain the reality test. Of course, the project's development activities will probably need to be adjusted if the District provides no financial support. There is, however, every likelihood that Valley will continue to bear the costs of at least some reality-test activities.

was the mere presence of relevant and readily utilizable information sufficient in itself to sustain the links or guarantee the information's use. In every district studied, there were one or two idea champions at the district level who took the lead in sustaining the linkage system. Each district devoted considerable resources to structures that supported the system. Most maintained on-going staff development which helped teachers learn how to interpret and act on the available information in their everyday activities. All created (or capitalized upon extant) organizational arrangements within which school personnel were empowered to use the information in making choices among alternative educational policies and practices. In short, these exemplary districts reified their commitment to and support of instructional information systems by institutionalizing them in a network of mutually interdependent and mutually sustaining activities carried out collaboratively in both school and district settings.

Now, the systemic evaluation effort differs from those studied by Bank and Williams. The latter were district generated and districtwide in scope; implementation moved "top down," from district office to the schools. In contrast, the joint UCLA-Site A project tests a school-based, "ground-up" approach to the development of information systems. At the school level, some of the functions Bank and Williams identified as components of successful instructional information systems have begun to emerge. While UCLA participants were the original idea champions, the Site A principal, an assistant principal, and the cadre of working-group teachers have begun to

assume that function. (They have enthusiastically taken responsibility for the upcoming faculty meeting to present the project and its products to the entire staff, for instance.) Through working-group sessions, they have begun to learn how to think about information and its uses in instructional planning and decision making.

Nevertheless, it seems likely that the Valley Unified School District will need to take at least some steps along the path marked out by Bank and Williams' findings if Site A is to maintain whatever information system UCLA helps the school develop. As noted in the last section, teachers at Site A are skeptical about the value of information. They define their relationship with the District administration as one of conflict, rather than collaboration. Thus, it seems unlikely that Site A faculty will give their time and energy to systemic evaluation without guarantees of District support. Furthermore, as the role of UCLA personnel gradually changes from one of initiation and leadership to one of support and study, the District's commitment will become more critical. Even though Site A working-group members may assume leadership, they will need help and guidance from the District office. They will need, at a minimum, the resources required for data collection, processing, and reporting in relevant formats. They will also need time to consider and discuss school-level data; to act on it in ways they deem appropriate for school renewal; and to review, revise and (thus) maintain their information system. They will also need problem-solving advice on technical and social organizational issues. All of this, it now

seems, will have to come directly or indirectly from the District office. Given the District administration's history and present ambiguous demeanor, it remains problematic how much of this support the District will choose to provide.

CONCLUSION

This paper has discussed four key social contextual issues that have emerged during the early phases of the joint UCLA-Site A systemic evaluation project:

(1) The current status of the Valley-Site A information system (CASA);

(2) Site A High teachers' clinical perspective on information and features of the school's social organization;

(3) Faculty-district relations as they impinge on the development of systemic evaluation at Site A; and

(4) The nature of District support for the UCLA-Site A "reality test" and what it portends for the future.

In documenting and describing each of these issues, the paper has been a progress report, not an account of case study findings. Nevertheless, it has suggested at appropriate points that the phenomena observed during the reality test thus far are at least similar to those found in other schools and school districts. The "under-utilization" of extant information is not unique to Site A, nor are the circumstances which appear to have led to the restricted use of CASA. Clinical thinking about information is sustained by the atomistic nature of Site A's organizational structure, but many

comprehensive high schools share this structure and a clinical perspective toward student information is widespread. Bad experiences with information -- experiences in which the time-and-effort costs far exceed discernible benefits -- are common in schools. So too are instances of District-faculty conflict and mistrust generated by contract negotiations and reductions in staff. Policy changes and vacillations in District support for schools' projects are usual, not extraordinary. Any "ground up" school-based information system, then, is likely to encounter such issues in the course of its development. As this paper has illustrated, such systems do not succeed or fail by virtue of their independent merit: on the basis of their quality of convenience or relevance alone. Rather, an information system and its social context are interdependent in dynamic, ecological balance. The social organizational arrangements of the school and district shape and sustain (or fail to sustain) the information system; and it, in turn, helps to shape and sustain (or fail to sustain) the arrangements of the school and district. It is the nature and features of this process which the systemic evaluation project hopes to identify and learn from as the reality test proceeds.

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The Use of Survey Data in Comprehensive Information Systems for Local School Improvement: Purposes, Practices, and Problems

Leigh Burstein and Kenneth A. Sirotnik

The purpose of this paper is to examine selected issues that arise in the use of survey data in comprehensive information systems designed to inform local school improvement efforts. To achieve this purpose, four questions are addressed, specifically:

1. What purpose can survey data serve in information systems designed for local school improvements?
2. What are the likely contents of the survey instruments designed to achieve the desired purposes?
3. What kinds of processes are necessary to develop surveys as elements of such systems?
4. What are the range of routine choices that occur in implementing surveys as recurring components of on-going systems?

These questions essentially deal with the why (question 1), what (question 2), and how (questions 3 and 4) aspects of developing surveys and integrating them into the information system.

To be of value in informing practice in the use of survey data in schools, it is necessary to address the above-mentioned questions within context. Obviously, the purposes, contents, and processes vary as a function of the conditions that lead one to consider the collection of survey data in the first place. The specific context that provides the impetus for this examination is an in-progress "reality test" of a school-focussed comprehensive information system being conducted in a suburban, California high school (to be called Site A throughout). This reality test has been underway since Fall 1983 and will continue through Fall 1985. The survey activity to date has been targeted predominantly on the collection of information from students

with decisions about surveying other constituencies (in this context, teachers, parents, and the community at large) still unresolved.

The specific context described points to the particular emphasis of our examination. Uses of surveys in secondary school improvement efforts are highlighted. The issues are those that concern school-based rather than district-based decision-making. The focus will primarily be on information collected from students than from other sources. Our experiences to date in the reality test will be used to illustrate key issues. Although these emphases are constraining to a certain degree, the issues that will be addressed are sufficiently general to be applicable to the circumstances of many schools and districts which are either already engaged in or are contemplating the use of comprehensive information systems in their improvement efforts.

This paper is a companion document to three others that arise out of the same reality test. In "Contextual Influences in Developing a School-Based Comprehensive Information System," (Dorr-Bremme, 1984), a brief description of the school district and school in which this effort is being conducted is provided along with the social organizational context that impinges on the development and use of the information system. Issues that arise in the development of reporting formats for communicating the system information for decision-making at various levels within the school are considered in "Making Sense Out of Comprehensive School Based Systems: Exploring Analyses and Reporting Methods for School Staff," (Sirotnik, 1984), and issues surrounding the development of the necessary computer hardware and software for implementing school-based information systems are examined in "Reporting on Distributive Processing Issues in Education Information Systems," (Ender, 1984). The reader should refer to these

documents, particularly Dorr-Bremme, (1984) for specific details about the educational context in which the study is being conducted. Only in the degree that such information is pertinent to choices in use and implementation of survey data will they be provided in this paper.

In the next section, the purposes for collecting survey data to include in information systems for local school improvement are discussed. The contents of the student survey developed as part of the reality test are described in section 3. Other possible types of items that were not included, and why they weren't, are also indicated. The processes through which this survey was developed and pertinent issues in implementing and maintaining the survey are considered in sections 4 and 5, respectively. The paper concludes with projections about the issues and problems that are likely to arise in attempts to repeat and maintain the student survey and to develop surveys for other constituents to augment the existing system.

Because the project from which the ideas about survey data use in school-based information systems are taken is an on-going one, the reader should construe this paper as a progress report rather than a definitive statement of findings. We anticipate providing a more extensive consideration of the issues as the project proceeds to augment the information system through additional survey data collection and further implementation of the reporting system.

The Purposes of Survey Data in Secondary School Improvement Efforts

To begin to understand why survey data might be useful to include in an information sysyem for secondary school improvement, one must first delineate both the intent of the improvement effort and the role of the information system itself in such efforts. Judging by the

contents of the recent commission reports on the status of education, by federal, state and local initiatives to reform education, and by educational research on secondary schools, the concern that drives improvement is the perceived decline in student achievement at the secondary level, this decline is believed to result in a less qualified and prepared pool of applicants for post-secondary education or for smooth transition to positions in business and industry.

Factors most often cited as contributing to this perceived decline in student achievement in secondary schools are the quality of the curriculum and teaching and the erosion of the commitment by students, parents, and school personnel to high educational expectations and to work to achieve high levels of performance. The concerns about curriculum are usually expressed as beliefs that students take too few academic ("rigorous") courses; what they do take is variously described as too "narrow", "diffuse", and "low level" and lacks a central purpose. Questions about teaching typically point to inadequate training and expertise along with declining levels of "ability". Perceived indicators of poor commitment to educational achievement on the part of students, parents, and schools are the increases in student absenteeism (including full-day, part-day, and single-period absences as well as increased tardiness), in dropouts, and in discipline problems (vandalism, alcohol and drug use, disrespectful behavior, disruptive behavior, etc.).

Improvement efforts in secondary schools tend to be targeted on refocussing the school's curriculum on a coherent rigorous program that better prepares more students for post-secondary education or for

jobs. Most states are pushing this effort by increasing graduation or college admission requirements (in terms of courses in core academic subjects), taking a closer look at teacher quality (via recruitment, selection, and retention procedures), and instituting an expanded array of achievement-based indicators by which to judge the performance of students and of the school they attend (as measured by aggregated performance).

The external pressures for reform are clearly strong as are the incentives for improvement in many cases. Internal to the school these pressures get translated in a variety of ways. One way is for the school staff (administrators and teachers) to join together to determine what their school is about, the goals it wants to accomplish and the activities needed to accomplish these goals. Under the best of circumstances, this type of improvement effort is school-based (at the least, in regard to defining the activities for goal attainment), and school-wide (encompassing all relevant constituencies).

In the recent initiatives for school-based educational change, the potential value of timely information about the school's contexts, processes, and outcomes to be an integral component of the improvement effort has received increased attention (Bank & Williams, 1981, 1983; Burstein, 1983a, 1984; Cooley, 1983; Hathaway, 1984; Idstein and Athey, 1984; Sirotnik and Oakes, 1982; Sirotnik, Burstein, & Thomas, 1983). The advent of the technology explosion within schools has made the idea of accumulating a diverse set of data on students and programs within a computerized information system a viable and

potentially appealing notion. The possible contents of such systems, the ways in which the information system contributes to the improvement effort and actual examples of such systems in operation have been discussed in earlier reports from this project (Burstein 1983a, 1983b, 1984; Dorr-Bremme, 1984; Sirotnik, 1984; Sirotnik et al., 1983; Sirotnik and Oakes, 1982) and from the CSE project on instructional information systems guided by Bank and Williams (1981, 1983, 1984).

Of most direct pertinence to the concern for the use of survey data in such information systems are certain premises that underly the work of the Systemic Evaluation Project, namely:

- The judicious collection, analysis, and maintainense of both achievement and non-achievement data within a comprehensive information system can be a key ingredient for informed decision-making, action taking, and evaluation that meets the needs at the building level (Burstein & Sirotnik, 1984b).

- While achievement data can serve diverse functions in schools, they are merely one set of symptoms of the functioning of the shcool culture and are best understood within that context through knowledge of the motivations, interests, and activities of the school constituencies (Burstein & Sirotnik, 1984a).

The first premise points to the kinds of issues that information systems are intended to address. Elsewhere, we (Burstein & Sirotnik, 1984a, 1984b) have identified three broad categories:

(1) Examining the functioning and impact of existing school programs.

(2) Monitoring key school "health" indicators such as course-taking patterns, absenteeism, post-graduate activities, participation in extra-curricular activities, and sentiments, attitudes, and opinions relevant to school held by administrators, teachers, students, parents, etc..

(3) Planning, guiding, and examining new and innovative in structional improvement programs.

All these categories reflect broader, potentially school-wide issues. The use of information to respond to these issues informs decision making at a social or organizational level. As Dorr-Bremme points out,

> The school is viewed here as a cultural/ecological system. Its parts are conceived to be inter-dependent. Thus it is ideally the entire system upon which renewal efforts focus. This means that information use toward renewal is necessarily a social process... (1984, p. 20)

Survey data are natural components of information systems designed to address the social, organizational issues identified above. As indicated in the second premise, the motivation, interests, and activities of school constituencies are central to decision-making at the system (organizational) level. Surveys provide an effective and efficient means of gathering this type of information. Depending on the operational features of the survey instrument itself and of the survey data collection, survey results can be used to routinely gather a variety of information, in a uniform manner, that can both help verify other information in the system (e.g., serve as an independent check of reported use of specific school services and programs) and provide "signals" or messages that are harder to convey directly. An example of the latter might be the message provided by responses to an item from a teacher survey indicating that a substantial proportion of the teachers believe that the principal has a problem in communicating with the staff. The anonymity and aggregation of such a communication affords greater protection to teachers from overreaction by the principal that can occur in response to a direct (and visible) airing of a perceived problem.

Our work also pointed to a second general class of information needs that a comprehensive system might fulfill. In the earlier phases of our reality test, the teachers we worked with did not routinely or easily view information in terms of its social uses. Instead, they were more apt to approach our questions about their information needs from a clinical or diagnostic perspective. That is, teachers tended to value data from the information system that helps them directly in working with their students.

The question that drives this clinical perspective is whether a specific piece of information can contribute to refined judgements about a particular student or groups of students. For instance, one of the teachers participating in our study saught data that would help her to form within-class heterogeneous groups to implement cooperative learning activities. Another teacher was interested in obtaining, early in the semester, information that would help her refine her class plans to better match her class composition; while she could normally adjust course content based on her actual experiences with students, this "adjustment" process often could not be initiated until the semester was well underway. A third teacher was interested in data about student learning styles that would contribute to his decisions about what class activities to emphasize. If we had paid more attention to counselor uses of information, we would have expected even greater emphasis on clinical applications.

Survey data are pertinent to the clinical perspective as well as the social perspective. As Sirotnik (1984) documents, items from the student survey contributed to both the student-level and class-level

reports designed for distribution to all classes early in each semester. Survey items on preferences in instructional activities, self-concept, attitudes toward school and specific subject matters were included in the reports as were other information (e.g., the number of extra- curricular activities a student is involved in and how many hours per week he or she is working) that could have been collected otherwise, but not without substantially greater costs of time and money.

At a general level, then, survey data can serve two broad purposes in comprehensive information systems for secondary school improvement:

> (a) to gather information that contributes to the characterization of the school environment from the perspective of its clients in order to establish the context with which the reform effort must operate

and

> (b) to assist in the diagnostic activities of school personnel with data gathered from school clients at or below their level in the educational hierarchy.

The Contents of the Student Surveys

As stated earlier, the general intent of collecting survey data is to obtain information about the characteristics, motivations, interests, and activities of the school constituents (students, teachers, administrators, parents) in order to better understand the functioning of the school culture. In addition, since we were interested, in our study, in how information aided decision-making at multiple levels (student, clsss, school) within a school, our collaborative efforts to incorporate survey data in the information system attempted to target topics and items usable at one or more level within the school.

The school-based work group that is participating in the development of the information system chose to focus its first year efforts on data about current students and programs at the high school (see next section for discussion of decision process). This descussion constrained the nature and contents of initial survey activities in several obvious ways. The time pressures exerted by the school calendar, the needs for efficient data collection and processing that could be managed and replicated by existing school and district personnel and resources, the interest in linking survey data with other information already available on-line through the district's computer, and the desire to collect information from all students across all the grades also affected the form and contents of the survey.

General Description of the Student Surveys

The final product of this first year effort, Site A Student Survey, May 1984 (Attachment I), was administered by third-period teachers to all students in attendance on Thursday, May 24, 1984. The contents of the survey, 185 separate questions or required responses, can be classified into seven major categories (see Table 1):

1. Self-Description of Demographic Characteristics, Educational Expectations, and Self-concept
2. General perceptions of Significant School Constituents (teacher, other students, counselors)
3. Perception of School Climate - Issues and Problems
4. Attitudes Toward Schooling (general and subject-matter related)
5. Instruction-Related Preferences
6. Influences on Class Selection
7. Knowledge of and Participation in Special School Programs

The uneven distribution of responses across categories does not represent substantive emphases and concerns as much as it does the limits of the multiple choice format when, in some cases, a particular category naturally generated a checklist (e.g. specific services offered by the Learning Resource Center, the possible range of classroom materials across all types of classes) while information tapped by other categories (e.g., expectations) could be collected more efficiently.

A modified version of the May 1984 survey was administered to incoming sophomores during a pre-school orientation program held in August 1984 (Attachment 2). This survey was intended to collect base information from students about their perceptions of their high school prior to actual experience at the school. The survey required 104 responses versus 185 for the Spring Survey. All questions related to specific experiences at the high school were either eliminated (e.g., items on Perceptions of Teachers and Other Students, Specific Program Participation, Course Selection Influences) or modified to reflect perceptions rather than experiences (General School Climate Issues and Problems).

Exclusion of Potentially Sensitive Questions

There are a few features of the survey that warrant special mention. First, virtually all items that could be construed as reflecting student attitudes toward a specific administrator or teacher in the school were excluded. Thus students' attitudes toward the principal and their subject-matter specific instructional preferences were not collected. Because the student was not

responding anonymously (in order to be able to link survey data with other student information), it was felt that these type of questions might be too intimidating and affect the integrity of the responses throughout the survey.

The elimination of items directly about the principal is partially offset by the accumulated responses of students to questions about the school climate with respect to school organization and control. At this particular high school (like many others) the principal and his administration establishes the structure for student, teacher, and parental input to decision-making, sets the standards for appropriate behavior and the general tone for relationships among the various constituents in the school. Direct principal-student contacts typically occur only in the extremes of student behavior -- disciplinary action, on the one hand, and awards, leadership, and special services on the other. These special circumstances (both rewards and sanctions) most likely influence the judgments of the students involved while the rest of the student body relies on more indirect perceptions colored by peer, teacher, and parent attitudes. Under such conditions, indirect means of collecting information about attitudes toward the principal may be preferred because it provides a potentially better balance to the biases introduced by the differential familiarity of students with the actual role of the principal.

The exclusion of subject-matter specific instructional items presents a more difficult problem. Ideally, there are many instructional preference questions that should be targeted to particular content areas. The inclusion of only generic (non-course

specific) items yields data that are less specifically relevant to the classroom decisions of a given teacher. For example, students expressing a preference for small group learning activities (questions 106-109 from the spring survey) may feel differently about this grouping practice in their history classes than they do, say, in mathematics; the same possibility arises in attempting to interpret student preferences in materials and activities (questions 110-138). In the final analysis, the decision to ask general questions was made for pragmatic reasons; a longer survey would have been necessary and we were already concerned about length. It was also felt that teachers wanting more course-specific information could follow up with questionaires of their own to further probe student preferences.

Program Specific Questions

A second general set of points are relevant to the sections on course selection and special program knowledge and participation. These two sections of the survey were intended to examine specific ongoing activities in the school. With respect to course selection, the principal has recently instituted a policy that effectively restricted student ability to choose their teachers for particular courses. This policy had not been fully implemented at the time of the spring survey, but the planned change had already been made known to students. In a sense, these items reflected different circumstances for different students. For seniors (who had freedom to choose their instructor throughout their high school years), this information presumably describes the basis for their typical class selection. But for the 10th and 11th graders, the survey represented

a chance to communicate their sentiments about the new "no-choice" policy which they would experience. Thus the degree to which 10th and 11th graders differed from seniors by a larger margin than they do in other categories of questions, reflects in part a reaction to a policy change. Furthermore, asking these questions in subsequent years might enable the administration to detect any shifts (toward greater acceptance of or resistance to the policy).

The questions on the Learning Resource Center (LRC) and Career Magnet School (CMS) represent other instances where the purpose of the data is to examine an ongoing innovation. Both programs were still relatively new. The questions asked, especially with respect to the LRC, were intended to provide the program's director with formative information about how students utilized and perceived the program's services. In addition, survey data on both LRC and CMS were expected to contribute to future evaluation reports for the state-funded School Improvement Program which funds both programs. Thus, the planned survey represented an opportunity to gather information that might serve external as well as internal purposes.

Single Items Versus Scales

Another feature of the survey content that warrants mention at this point is that in most cases, questions were included that were intended to stand alone as single indicators of a particular attitude, opinion or belief. Possibly the one major exception to this was the set of 14 questions on academic and social self-concept (questions 10-23), which could operate as singletons or as scales. So far, the indication is that an academic self-concept scale based on questions

15 through 23 will be used in the standard report developed for use by teachers and counselors (See Sirotnik & Burstein, 1984).

On the one hand, using single item indicators is a parsimonious way to collect information on a variety of topics; moreover, single items are also easier to understand (have higher face validity) than multi-question scales. On the other hand, under classical notions about the reliability and validity of survey data, single items have poorer psychometric properties than scales.

The choice is not really so clear-cut when the survey data are intended to inform decision-making at various levels in a practical setting rather than to serve as a reliable research or diagnostic tool. In judging the credibility of a specific student response to a given question, the decision-maker must obviously consider the response as one piece of a larger puzzle. When considering a question's data aggregated over groups of students, response tendencies matter (the choices that attract substantial numbers of responses; the pattern of choices for a question compared with those from related questions, e.g., an instructional preference for having class discussions rather than listening to the teacher). Typically, these aggregate (class or school level) tendencies are more resistant to invalidity and unreliability than their student-level counterparts. One can also be somewhat reasured when the patterns of student responses to adjacent questions differ in interpretable ways; such patterns usually indicate that students are neither ignoring question content nor haphazardly marking items as they proceed through the survey.

Meaningful Subgroup Information

Another concern in designing the survey was that enough information be gathered that could be used to form meaningful clusters of students that might conceivably react differently to the opportunities and programs operating at the school. Sex and grade are obvious characteristics to examine for possible differences in attitude.

In our reality test, the work group was interested in asking questions that characterized possible non-academic time commitments of students as well as other home factors that may affect student ability to focus on school work. These interests translated into questions about languages in the home (queston 2), the living situation (question 3, two parent family and other circumstances), parental help with school work (question 105), student employment status (question 4), participation in extracurricular activities (questions 39-43), television viewing (question 5), educational aspirations and expectations (both parents and students, questions 6-8), and homework and homework effort (questions 101-102). These questions, along with the self-concept scales and other data about student programs of study contained in the information system, represent attributes that can potentially inform teacher and counselor diagnoses about the source of academic difficulties of specific students and the advisability of changes in the amount of outside work assigned in specific courses.

At the school level, differences in student reaction to school policies and programs that are aligned with specific student attitudes can focus staff desisions on whether such differences are warranted and what needs to be done to eliminate them. For instance, at Site A,

sex differences in the patterns of response to questions about satisfaction with the counseling services offered provided empirical evidence that supported a request for appointment of more women to the counseling staff. Other survey data suggested that attitudes of eleventh graders are typically lower than attitudes in the other two grades. These results point to the need for improvement efforts that employ different strategies for this grade level to bring about changes in their understanding of the mutual commitment of school staff and students to providing them appropriate educational opportunities.

The above are illustrative of the ways in which survey data on student attitudes can combine with program and achievement data to enhance the possibilities for refined and targeted school-based decision-making. The reason for emphasizing the "obvious" is that the benefits of questions for classifying students are often short-changed in trying to keep questionnaire size manageable (and perhaps limit intrusiveness). And, except for obvious variables like sex and grade, school-based practitioners are not typically used to examining information separated by meaningful subgroups.

Questions for Linking with Other Surveys

In designing the student survey, we were also careful to include questions about school climate that might also be asked of the other school constituencies, particularly teachers and parents. In the present case, the perceptions of school function items (questions 90 and 91) are the best example of this type of question. The differences that occurred in student perceptions of what the school

selves think (see Sirotnik, 1984a) is useful for identifying perceived mis-matches in the purpose of schooling. But comparisons of student responses with parental and teacher attitudes are necessary to understand the depth of the conflict surrounding this issue and to identify the kind of educational effort and changes that could bring constituent attitudes into closer agreement. Other categories of questions that might be asked in questionaires intended for different constituents include items from sections on general perceptions of significant school constituents and general school climate issues and problems.

The Survey Development Process

The context and circumstances under which the student survey was developed in this project are likely to arise in secondary school improvement efforts in other settings (see Dorr-Bremme, 1984). The actual process that led to the surveys already conducted is one that proved "effective" and will likely be repeated in developing other surveys for the same school. In this section the development activities are briefly described.

From the beginning of the reality test, it was clear to CSE staff that Site A's existing computerized information system would need to be augmented by the collection of student survey data. We were also aware that this augmentation represented an "intervention" into the existing information and social organizational networks of the school. Our reading of the literature on implementing interventions, innovations and educational changes in general (e.g., Goodland, 19875;

Berman and McLaughlin, 1977; Bank and Williams 1981, 1983) made us keenly aware of the evidence that suggests that persons expected to directly benefit from the innovation and implement it within ongoing school activities should be involved in planning and designing the innovation.

In building-level change efforts at the secondary level, mechanisms that involve school staff early on are likely to foster the dialogue necessary to match the innovation to the circumstances and interests that exist in the school and to develop a sense of "ownership" by the staff (and presumably the momentum and support to firmly plant the innovation). In the case of the student survey, this involvement translates into active and intensive teacher and administrator input into the contents of the survey, its administration, and the dissemination of its results.

The need to involve school staff in survey development has to be balanced against other factors that work against extensive investment of school staff time. Secondary school teachers lead hectic lives; typically, they teach five sections (usually different subject-matter) out of a six-period day. This leaves little time for class preparation and grading during school hours. On top of their class responsibilities, their teaching activities are regularly interrupted by staff development sessions, school-wide meetings, contributions to school and district planning and other special programs operating in the school, not to mention disruptions due to their personal lives (e.g., as parents). To give some idea of the magnitude of disruption on any given day, on the morning the survey results and new reporting formats were presented to the total staff (during a regular monthly

staff meeting held from 7:35 am to 9:45 am; the first three class periods were canceled for all students), the school still needed substitute coverage for 35 class periods (staff size is roughly 70), most of which represented teachers involved in other district business (e.g., curriculum planning and test development). It is expensive to use teacher time in developing the survey, unless the whole staff was committed to the effort by canceling classes, which represents an expense of a different sort. Substitutes are necessary to replace teachers wotking on system development during the day and teachers would have to be paid (at least in this district) to encourage them to meet during after-school hours. Finally, total staff involvement at all phases of the development would create management and timing problems; it simply becomes too unruly and inefficient.

The balance we struck to obtain sufficient but non-overwhelming staff involvement was to form a work group of teachers and administrators to participate in the design of the information system, development of the questionaires and report formats, and planning of dissemination to total school staff as well as implementation into the school improvement effort. Our work group consists of five teachers representing different school departments (in our case, English, Math, Foreign Lanuguage, Social Studies, Health/Social Psychology), the coordinator of the School Improvement Program who also works as a counselor part-time, the vice principal responsible for programs and the principal. Other teachers and administrators will probably be added during the coming years as the range of activities expand.

The teacher participants were a mixture of volunteers who were already involved in many of the school's existing improvement

activities (including Partnership activities with UCLA, see Dorr-Bremme) and others who were reticent about the viability of the change efforts given the existing school atmosphere. The teachers were not necessarily expected to represent their departments but it was hoped that they would be sufficiently well connected with their colleagues to keep both other teachers and CSE project staff informed about the information system development and reactions to it.

Even though the work group was kept small, it did not remove the need to develop early on efforts to foster mutual trust and understanding between school staff and CSE researchers and to limit time and work demands on teachers and productively use scheduled meetings. Visible evidence of district and school administration support for the project helped. It was also important to convince the teachers that CSE was genuinely committed to a strong role by school personnel in the development and use of the information system that could serve the school's needs rather than simply CSE's research agenda. (Such emphasis was consistent with project plans and perspectives; see Burstein and Sirotnik, 1984a, 1984b, Sirotnik et al., 1983).

The above concerns lead to a decision to begin activities of the work group with a series of meetings where CSE staff explained the general concepts that guided their interest in comprehensive information systems for local school improvement and provided working group members with details of the collaborative relationship that had been agreed upon by the district and school administrators (see Attachment 3, the topics for consideration presented at the first work group meeting). A summary of the purpose of the work, expectations substantive and operational features of the planned

reality test and of district and CSE commitments to the collaboration were provided to working group members (Burstein and Sirotnik, 1984a, attachment 4). This summary also helped to establish the agenda for the work group activities in the early phases of the project.

After initial CSE presentations on the possible puposes of information systems and their use for decisions at multiple levels, the work group meetings concentrated on identifying the kinds of information the teachers, counselors, and administrators would view to be useful for student-level, class-level, school-level, and program-specific decisions (Item 1 from the February 22 agenda, Attachment 3). As is characterized in other progect reports by Dorr-Bremme and Sirotnik, the teacher tended to focus in the early meetings on classroom uses of information that was primarily clinical in nature (see especially Dorr-Bremme, 1984, pp. 18-28). Discussions surrounding social uses of information at the school level typically had to be initiated by CSE staff or the school administrators.

There were four half-day work group meetings held prior to the May administration of the student survey. The meetings covered the following topics:

1. February 22, 1984 -- Description of the collaborative relationship and overview of project purpose; group discussion of information uses at different levels; teahers were asked to bring to the next meeting a list of the information that they would like to have to use at the student, class, and school levels.

2. February 28, 1984 -- Discussion of information identified by teachers as useful; description of information already available in the school's computerized student system; discussion of the need to augment the system with survey data and how the survey itself could by developed. Plans made to distribute student survey items from Sirotnik et al. report to work group members who would select those items they viewed as appropriate for the student survey and generate other items to

include; CSE to compile group choices and prepare draft of proposed survey for next meeting.

3. April 3, 1984 -- Revision of the student survey; CSE to incorporate revisions into next draft.

4. May 17, 1984 -- Final revision of student survey; discussion of alternatives for administering the survey.

Why Student Rather than Teacher Surveys

A few comments about the topics considered and not considered at the meeting are warranted. First, the discussion focussed early on needs for information about students. Once the question of collecting survey data was broached, the work group members were able to identify a number of good reasons for devoting time to student surveying, but were less clear about the usefulness of surveys of teachers. This preference should be expected given the composition of the work group (predominantly teachers). Teachers could see how information about student attitudes, opinions, and beliefs might assist them in their own planning activities and in dealing with individual students; with some encouragement by CSE, they also recognized at least the possibility that survey data might be useful for school-level decision making. Moreover, surveys completed by students represented a limited intrusion on scarce teacher time.

A teacher survey, on the other hand, was seen by some group members as a waste of time, both literally and figuratively. Their previous experiences with needs assessments conducted by the school and district were perceived to be of limited value to them. In some cases earlier surveys had been too long for the value of information obtained or had simply been irrelevant to teacher needs and to their perceptions of how changes were made in the school and district.

There were also occasions where teachers received no feedback of survey results (or at least no clearly recongnizable feedback); thus the time spent completing the survey was perceived to be wasted. One group member voiced the concern that the information could actually be abused because administrators at the school and district level might actually use it in ways detrimental to individual teachers (Sirotnik, 1984a, discusses this situation in more detail). In sum, efforts to proceed with parallel development of teacher surveys along with student surveys met with greater resistance (and the possibility of less cooperation) that might have caused the project work to bog down.

In the end, a decision was made to postpone consideration of a teacher survey until after the student survey was developed and administered. In addition to the concern for its effects on the working relationships within the work group, practical consideration also supported this decision. Given the limited amount of time to construct and administer a student survey before the end of the school year, especially without unduely disrupting the work group teachers' course schedules, there simply was not enough time to do both. Moreover, it was felt that successful development, administration, and reporting of the student survey might generate greater interest in seeking information on the attitudes of other school constituencies. Early reponse to the November 8, 1984 school-wide presentation of the survey results and other reports developed by the working groups does indicate teachers are now more interested in providing survey information about themselves for use in school improvement activities.

Identifying Appropriate Survey Items

The task of developing items for any survey can be onerous, especially if there are no existing surveys to serve as gudes for the activity. In the present case, there are lots of surveys of secondary school students although most have been used primarily for research purposes. Work on climate (by Moos, Fraser, Walberg and others), school effectiveness (e.g., Bookover, Epstein), and school change and improvement (Goodlad, Hall, Klausmeir, Sirotnik) are good sources for items that might be pertinent to the interests at Site A. In a previous report (Sirotnik et al., 1983), we had compiled illustrative student survey items, taken mainly from work on A Study of Schooling (Goodlad, 1983). Because of Sirotnik's previous experience with the functioning of these items, we had hoped that the work group might find some portion of them to be useful for informing decisions at Site A.

In practice, the work group relied on CSE's survey questions to a greater extent than was originally envisioned. With the exception of the items on course selection and specific school programs, virtually all questions (about 130 of 185) were taken from the CSE pool or were revisions of those items.

Hindsight suggests at least three possible reasons for the heavy reliance on the existing survey pool. First, work group members were probably influenced by our repeated emphasis on social uses of survey information and, either consciously or unconsiously, yielded to our "authority and experience" by depending on our question pool for ideas. Second, the work group members in fact had little previous

experience in developing survey questions. Since they did not inherently value questionnaire development work, they were willing to follow the advice of persons more familiar with survey development (us in this case). Presumably, if we had not been available, they would have used (possibly in modified form) a questionnaire developed by someone else, as long as it seemed relevant to their needs. Finally, given competing time demands, work group members chose to be more reactive than proactive in the survey development once their basic interests were represented. Using existing questions that covered topics viewed as useful was a reasonable and productive decision from their viewpoint.

After initial emphases were selected, the work group meetings honed in on whittling down a long list of survey items to a practically managable and useful number (less than 200 distinct repsonses required of students, more on this below). The main problem was that while work group members were concerned about devoting too much student time to complete the survey (the consensus was that one class period represented an upper time limit), each member selected many more questions from the available pool than could actually be asked and their selections did not necessarily agree; in fact almost all items were considered useful by at least one work group member.

To speed up the reduction of the pool of questions, CSE staff compiled work group member choices and revised the survey eliminating questions not chosen by more than one member and also dropping questions that their past experience suggested wouldn't work well in the study setting. Another round of work group discussion helped to

eliminate remaining redundancies, eliminate other items perceived as interesting but perhaps not useful for the school's work, and to improve questionnaire layout and question wording. Even with the imposed constraints on length and number of question alternatives (a maximum of five), the final instrument was short enough for the machine- scorable answer sheets and the allotted time period.

Administration of the Survey

Within a week of the final work group meeting, the spring survey was ready, printed in sufficient quantities along with pre-identified answer sheets, and administered to students during their third period classes. Out of an estimated 1678 students presumed to still be enrolled at the time of the survey, 1461 students (87%) completed some part of the student survey. The typical non-response rate for a question among the first 120 was around 1% with another 1 to 2% double-marked or out of range responses. Even at the end of the survey there was typically no more than 20% non-responses. We interpreted these rates of usable data as evidence that the length of the survey was typically not a problem and that students treated the task of answering the survey questions seriously.

Once the decision was made to administer a survey to incoming sophomores, CSE staff took a first pass at modifying the survey for the different population of students, ones with little direct knowledge of the actual functioning of the high school. The work group offered very few additional changes.

The incoming sophomore survey was administered under different conditions than the spring survey. Students would be asked to

complete it during a pre-school meeting with their couselors to develop their course of study for the upcoming year. As a result all students who attended these pre-school sessions were surveyed while those who missed the meetings (due to being out of town) were not surveyed (at least for the present). The principal estimates that roughly 75% of the incoming sophomores attended these sessions. The final count of students completing the August survey was 464. Again, the percentage of omits and mis-marking of answer sheets was very low. In fact, the main problem encountered during this survey administration were parents attending the session with their children who wanted to complete surveys of their own.

Routing Choices in Implementing the Student Survey

Since the reality test work at Site A will continue into the coming year, in future reports, we expect to further elaborate on the process of developing surveys to use in the improvement effort. Here we briefly consider some of the routine choices that arose in the design and administration of the survey. They included the following:

1. Sample of students versus entire eligible population.
2. Survey format (Multiple choice, open-ended or mixtures)
3. Survey length
4. Uniform versus tailored questionnaires
5. Identifiable versus anonymous reponses
6. Timing of administration
7. Actual administraton conditions
8. Following up on absentees

The topics considered represent the range of mundane "nuts and bolts" decisions that can accur in implementing surveys designed for ongoing school improvement activities in a given school context. In our discussion we briefly describe the choices involved and the decisions we made.

Sample versus Census

If the work group had been interested only in survey questions to serve as indicators of school-level trends in attitudes and beliefs, obtaining survey data from a sample of students would suffice statistically at a reduced cost in terms of student and teacher time. However, once it became clear that the work group was interested in survey data to inform student level and class level decisions, there was no other choice than to attempt to administer the survey to all eligible students.

There are drawbacks associated with surveying a sample of students that perhaps more than offset its advantages in circumstances like those existing in the reality test. Ideally, a simple random sample would be prefered over more complex designs that, for example, sampled classrooms. But the logistics of choosing a representative sample of students and then arranging the administration of the survey to this sample can be a nightmare, and highly disruptive as well. Sampling classes is easier but less efficient given the intent to capture student consensus. Moreover, both sampling schemes require someone with a certain level of technical sophistication to design, select, and implement the sample. Such persons are in short supply in most high schools.

Our judgment is that school staff who plan to conduct such surveys should choose to administer it to the entire student population as long as there are means for machine-tabulation of the responses. The extra costs of paper and student time are marginal if the primary concern is on quality data usable for both clinical and social decision-making.

Survey Format

The perennial debate over the choice between selected (multiple choice) versus generated (open-ended) reponse is relevant to the present survey. Multiple choice questions are more efficient (assuming that machine-scorable answer sheets can be used) and more questions can be asked during a fixed time interval. Open-ended questions place fewer constraints on the repondent, thus offering the possibility for more diverse feedback. They also convey an aura of openness to free expression of opinion; this can, however, be intimidating for the less articulate respondent who might find it easier to express his or her thoughts when given a choice of possible alternatives. Additionally, the necessity of translating open-ended questionnaire responses into codable data can be a difficult and time-consuming task. To devote the main portion of any survey intended for a large sample to open-ended questions is risky, especially when resources are limited and quick turn-around is desirable.

Given the desirability for timely and cost efficient handling of survey data intended for use in improvement efforts, the reliance on mainly multiple choice questions is advisable whenever machine scoring of responses is possible (otherwise, the resource burdens are more

equal for multiple choice and open-ended formats). In our case, the district operates a standard test scoring system that can generate pre-coded and labeled answer sheets (with student names and other identifying characteristics), can easily tabulate responses on a standard answer sheet containing 200 five choice questions, and can generate response frequencies and a data tape to merge with other data in the existing information system. Thus the multiple choice format was ideal, especially since it placed little additional human burden on the district's limited resources devoted to the reality test. We could have collected selected open-ended data from students in addition to the survey (using a different instrument to save the existing questionnaire for re-use), but did not. Regardless of whether this was the right decision, we have not received any negative reactions from school staff about the absence of open-ended questions. Again, this may simply be a case of over reliance on our "expertise".

Survey Length

We have already mentioned the two major constraints on the length of a survey -- the optimal amount of time required to complete it and the number of responses that can be coded on answer sheets in the use of machine-scored multiple choice questions. At the secondary level, a 50-minute class period represents a reasonable upper limit to impose on time required to provide instruction and complete an occassional survey. Shorter questionnaires which take less than 15 minutes to complete can be administered on a more frequent basis if the

information to be collected warrants this alternative format (e.g., frequent monitoring for changes in attitudes).

Except for the constraint of a maximum of 200 responses, only limited consideration was devoted to the time issues by the work group. The teachers did feel that the final version of the spring survey was not too long for a single class period, which concurred with our own impressions based on other similar surveys. Both direct and indirect evidence from the actual May administration of the survey indicates that most students had enough time to complete the survey. The tendency for more non-response at the end of the questionnaire (15 to 20% versus 1 to 2% for earlier questions) can in part be attributed to decisions by individual teachers (the survey was adminstered in class by the regular teacher after a brief training session) to devote only part of the class period to completing the survey (one teacher reportedly allowed only 10 minutes). It also may be that the questions at the end of the survey about the LRC and CMS were viewed by many students as less relevant to them, causing many to simply skip them. The pattern of non-reponse provides limited support for the latter interpretation. (Attachment 5 is a copy of the Spring survey containing the percentage distribution of responses.) There were no problems with the shorter incoming sophomore survey. On the basis of experience this past Spring, we will recommend keeping the student survey length at around 150 questions, perhaps by administering questions relevent to special programs on a separate occasion.

Uniform versus Tailored Surveys

A decision was made to administer the same survey to all students during the Spring. We would have prefered to ask graduating seniors additional questions probing their post-graduation plans but the logistics of doing this first go-around were simply too complicated. Besides, we felt it was unlikely that the school and district actually had the necessary motivation to carry out this more demanding administrtion and analysis task this early on.

We didn't hesitate to shorten the survey and modify selected items for use with incoming sophomores. This was a clear instance where tailoring questions to the perspectives and knowledge of a specific subgroup was highly desirable. Too many questions had no meaning to person who had never enrolled at the Site A high school. Moreover, because this subgroup was administered the survey separately from the other students, there were no additional logistical problems at this phase. In terms of the computerization of these data (Attachment 6 reports the percentage distributions from the Incoming Sophomore Survey), a table of corresponding question numbers was sufficient to allow merger with data from the earlier survey since no new questions were added.

In the future, the decisions we made might not be so clear-cut. There is interest in following up graduating seniors that might lead to special tailoring for them. If the pre-school orientation program (new this past year) were dropped, it might not be possible to survey entering 10th graders separately (though it would still be desirable to survey them at the beginning of their enrollment at the high

school). It seems to us that both the specific needs of the school constituencies and their sophistication at dealing with the more complex survey configurations associated with tailoring will determine how this school, and presumably others, would handle this issue without special assistance.

Identifiability Versus Anonymity

From the outset, we had wanted to be able to identify students who completed a student survey. Otherwise, it would be impossible to integrate the survey data with the rest of the existing student information system. Given the uses that the work group expected to make of the information (particuarly for class planning and diagnostic purposes), it is not surprising that they supported the administration of student identifiable surveys.

Despite our decision, there were, and still are, strong misgivings about the possibility of abuse when the responses of specific students can be identified. The concerns are the obvious ones. Teachers want to know enough to help them plan instruction but are worried about biasing their judgments of student needs and performance in the class on extra-course information (that is, developing inaccurate and unfair expectancies for specific students). Also, other students might obtain access to the responses breaching their confidentiality.

In the accompanying papers by Dorr-Bremme (1984), Sirotnik (1984), and Sirotnik and Burstein (1984), this issue of confidentiality is explored at greater length. In the final analysis

the dilemma is a real one. Even with additional safegaurds to be implemented with respect to the use of the survey data in individual student reports, it is still necessary to place one's faith in the integrity and professionalism of teachers, counselors and administrators to use the survey data wisely. Any evidence of abuse of survey results would likely compromise its validity and eventually destroy its value for the ongoing information system.

Timing

The reason for administering the student survey in late Spring was the pragmatic one that we basically had no alternative due to time constraints. Ideally, there should be some more substantive basis for choosing when to administer the survey. Decisions about timing should reflect the uses intended for the data rather than the other way around.

Conducting a survey near the end of the school year should yield better data on graduating seniors and more knowlegable experience-governed responses from students in their first year at the school (10th graders in the present case). But the student population typically changes by late Spring, especially in high schools. For those students not succeeding at the school and not strongly committed to the benefits of schooling as opposed to the short-term gratification of job earnings and limiting of possibly negative school experiences, dropping out late in the school year becomes an increasingly appealing option. So by the end of Spring, one is left with a more school-oriented student population. The survey simply

misses a segment of students (potential dropouts) that might be the targets of specific school reform.

While there is no simple solution to the timing question, it does help to survey twice annually (early fall and late spring) if this choice doesn't unduely tax school resources. Separate fall and spring surveys could be shorter and could include sections of common as well as distinct questions (e.g., more post-graduate plans and program information in Spring, more diagnostically relevant questions in the Fall). This choice is especially beneficial in cases where schools plan to place ongoing, heavy emphasis on survey data in their school based decision making.

Administration

Selecting an optimal design for administering a student survey during the school day can be formidable. We had originally planned to survey each grade level at different times during the periods special to them. This plan would have allowed some tailoring of the survey, or could have reduced costs if a common survey could be reused at the different grade levels.

Instead, the survey was administered by the regular classroom teacher during the third-period classes. This format required more survey forms but simplified the packaging of pre-labeled answer sheets. It also required that all third period teachers be trained to administer the survey. As might be expected, some teachers followed instruction better than others; there were a few classes of students who either failed to take or to complete the survey. But, at this point, we see no simple alternative if the survey is going to continue to be targeted to all students.

Absenteeism

When the intent is to survey every student, one has to consider how to handle students who failed to complete the survey on the given administration date. This decision is especially important when survey data are to be used as part of class-level and student-level decision making (as was the case here). Given the typical level of absenteeism (roughly 10-20% on any given day) at the school, any reports with student-level data might begin to look like swiss cheese unless some attempt is make to follow up.

To this point, no decision has been made about whether and how to gather information from students who didn't complete the survey. The administration of the survey was conducted on a mid-week day (Thursday) during a class period in the middle of the day to reduce the problems of "late risers" and "early leavers". While plans for follow up surveying of missing students are not firm, the present sense is that an attempt should be made to have counselors administer the survey to students missing the first round. Obviously, this administration would occur long after the time of the original data collection with more school history to contend with and perhaps a less cooperative set of repondents (not to mention a different administration procedure). These factors will have to be considered in greater detail before a final decision is reached for the Site A high school.

Emerging Issues: What Next?

Other issues yet to be resolved appear throughout this report. There is strong sentiment to survey teachers and hopefully parents. Also, student survey data will continue to be collected in order to update student opinions for the student-level and class- level reports and to begin to monitor trends at the school level. The design and administration of these surveys will likely encounter the same sorts of content selection and "nuts and bolts" decisions as in the first student survey, probably with different solutions in certain cases (e.g., we expect the teacher survey data to be collected anonymously).

During the next year we will explore the "clinical versus social uses of information" issues in greater detail throughout all phases of project work. In terms of the survey data, a question worth considering is how the emphasis and interests in the work group change when the teachers are to be the source of information. We expect less clinical and more social emphasis (of the "sending a message to the administration and district" type). We will also devote more time to multivariate analysis of the student survey data to explore patterns of differential responses to school functioning by different subgroups of students over time. Finally, we will monitor the reactions of school staff to the dissemination of the first round of survey data and newly designed reports. We will be looking for indicators of the actual ways in which the survey data are used and whether the staff becomes more sophisticated in their handling of the survey and other data as the information system has become a more visible part of the school's improvement efforts.

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Table 1. Contents of the May 1984 Student Survey at Site A

General Category	No. of Items	Subcategories and Specific Content
I. Self-Description		
A. Demographic characteristics	13	Sex, languages in the home, living situation, employment, television viewing, extracurricular activities, amount of homework, frequency of homework submission, parental help with work
B. Expectations	4	Parental and student educational aspirations student educational expectations, comfort with career choices
C. Self-Concept	14	Academic and social self-concept items dealing with popularity, subject-matter abilities, school effort and performance
II. General Perceptions of Signifcant School Constituents		
A. Teachers	7	Such descriptors as helpful, high hopes for students, do a good job, care about us
B. Students	7	Such descriptors as helpful, have high hopes, care about each other, competitive
C. Counselors	3	Perceptions of ease of getting counselor help with academic, career, and personal decisions
III. General School Climate Issues and Problems		
A. Students	11	Misbehavior, racial conflict, drugs, alcohol, violence, poor attitudes, sex bias
B. Personnel	6	Teachers, counselors, administrators
C. Program	17	Courses, teaching, value of learning, time for learning
D. School organization and control	6	Rules, scheduling, student and parental input to decision-making, selection of classes and teachers
E. Physical atmosphere	3	Size, appearance, crowdedness

General Category	No. of Items	Subcategories and Specific Content
IV. Attitudes		
A. General toward school	2	Like school, would go to different school
B. Subject-matter	9	Math, English, arts, social studies, science, foreign languages, business and economics, physical education
C. Perceptions of school functions	2	Student perceptions of school and own beliefs about most important function of schooling
V. Instruction-Related Attitudes	33	Preferences in instructional grouping, activities, materials and characteristics
VI. Influences on class choice	14	Student perceptions of factors affecting choice of classes
VII. Special Program and Knowledge	34	Specific items on two special programs (Career Magnet School and Learning Resource Center)

Attachment 1

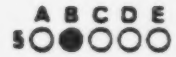
High School Student Survey

May 24, 1984

The survey you are about to complete will ask you questions about yourself and about your school. This is not a test. There are no right or wrong answers. The survey will give you an opportunity to express how you feel about what happens in your classes and around school. That is why it is important to answer the questions as truthfully and as carefully as possible.

DO NOT WRITE ON THESE PAGES

MARK YOUR ANSWERS ON THE ANSWER SHEET PROVIDED. You will notice that answers go from A to E or from F to K. This does not matter. Simply choose the one answer that best fits your opinion for each question. MARK ONLY ONE LETTER ON THE ANSWER SHEET FOR EACH QUESTION. For example, if you chose answer B for question number 5, you would mark the answer sheet like this:



Or, if you chose answer J for question number 6, you would mark the answer sheet like this:

Remember, mark only one letter on the answer sheet for each question. If there are any words or questions you don't understand, please raise your hand and ask for help.

DO NOT BEGIN UNTIL YOU RECEIVE MORE INSTRUCTIONS

This question will be answered differently than the others. You will use the blue box at the top of the answer sheet. Read the list of Career Magnet Schools below.

1. Physical Science and Technology
2. International Relations & Political Science
3. Business
4. Industry
5. Performing, Visual and Fine Arts
6. Mental, Physical & Biological Sciences
7. Liberal Arts
8. Entry and Essentials
9. Don't Know

Now, using the last column of the blue box (to the far right), mark the number on the answer sheet that matches your career magnet school.

Starting with number 1 on the survey, the rest of the questions will be answered in the white area of the answer sheet. Remember, do not mark on the survey sheets themselves. Mark one answer for each question on the answer sheet.

Questions About Yourself

1. Sex:
   A. Male
   B. Female

2. Besides English, what other languages are spoken in your home:
   F. None
   G. Spanish
   H. Vietnamese
   J. Chinese
   K. Other

3. Living situation:
   A. With two parents (includes stepparents)
   B. With one parent only (mother or father only)
   C. Guardian(s)/foster parents
   D. Alone or with friends
   E. Other

4. About how many hours a week do you usually spend working on a job during the school year?
   F. None. I am not employed during the school year.
   G. About 10 hours or less
   H. About 15 - 20 hours
   J. About 20 - 30 hours
   K. More than 30 hours

5. How many hours do you watch television each day?
   A. None
   B. About 1 hour
   C. About 2 - 3 hours
   D. About 4 - 5 hours
   E. More than 5 hours

Choose the ONE answer that best completes each of the following sentences.

6. If I could do anything I want, I would like to:
   F. Quit school as soon as possible.
   G. Finish high school.
   H. Go to trade/technical school or junior college.
   J. Go to a 4-year college or university.
   K. Don't know.

7. I think my parents would like me to:
   A. Quit school as soon as possible.
   B. Finish high school.
   C. Go to trade/technical school or junior college.
   D. Go to a 4-year college or university.
   E. Don't know.

DO NOT WRITE ON THIS PAGE

8. Actually, I will probably:

F. Quit school as soon as possible.
G. Finish high school.
H. Go to trade/technical school or junior college.
J. Go to a 4-year college or university.
K. Don't know.

9. How comfortable do you feel about choosing a future career goal at this point in your life?

A. Very Uncomfortable
B. Uncomfortable
C. Neither Uncomfortable or Comfortable
D. Comfortable
E. Very Comfortable

The following sentences describe some of the ways in which people might think about themselves.

Read each of the following sentences carefully and mark the letter on the answer sheet that tells how much it is like you.

Look at the following practice sentence and mark the letter on the answer sheet that tells how much you agree or disagree with the sentence.

PRACTICE	Strongly Agree	Mildly Agree	Not Sure	Mildly Disagree	Strongly Disagree
I am good at art	A.	B.	C.	D.	E.

If you Choose "Strongly Agree," you're saying that you are very good at art. If you choose "Mildly Agree," you're saying that you are OK at art. If you choose "Mildly Disagree," you're saying that you are not too good at art. If you choose "Strongly Disagree," you're saying that you are very poor at art.

	Strongly Agree	Mildly Agree	Not Sure	Mildly Disagree	Strongly Disagree
10. I'm popular with kids my own age.	F.	G.	H.	J.	K.
11. Kids usually follow my ideas.	A.	B.	C.	D.	E.
12. Most people are better liked than I am.	F.	G.	H.	J	K.
13. It is hard for me to make friends.	A.	B.	C.	D.	E.
14. I have no real friends.	F.	G.	H.	J.	K.
15. I'm not doing as well as I'd like to in school.	A.	B.	C.	D.	E.
16. I am a good reader.	F.	G.	H.	J.	K.
17. I'm proud of my schoolwork.	A.	B.	C.	D.	E.
18. I'm good at math.	F.	G.	H.	J.	K.
19. I'm doing the best work that I can.	A.	B.	C.	D.	E.
20. I am able to do schoolwork at least as well as other students.	F.	G.	H.	J.	K.

DO NOT WRITE ON THIS PAGE

	Strongly Agree	Mildly Agree	Not Sure	Mildly Disagree	Strongly Disagree
21. My grades are not good enough.	A.	B.	C.	D.	E.
22. I'm always making mistakes in my schoolwork.	F.	G.	H.	J.	K.
23. I am a good writer.	A.	B.	C.	D.	E.

Questions About Your School Life

How much do the following words describe most of the teachers at this school?

	Very Much	Pretty Much	Some-what	Only A Little Bit	Not at All
24. Friendly	F.	G.	H.	J.	K.
25. Helpful	A.	B.	C.	D.	E.
26. Have high hopes for us	F.	G.	H.	J.	K.
27. Talk to us	A.	B.	C.	D.	E.
28. Let us talk to them	F.	G.	H.	J.	K.
29. Care about us	A.	B.	C.	D.	E.
30. Do a good job	F.	G.	H.	J.	K.

How much do the following words describe how you feel about most of the students at this school?

	Very Much	Pretty Much	Some-what	Only A Little Bit	Not at All
31. Friendly	A.	B.	C.	D.	E.
32. Helpful	F.	G.	H.	J.	K.
33. Have high hopes	A.	B.	C.	D.	E.
34. Smart	F.	G.	H.	J.	K.
35. Talk to each other	A.	B.	C.	D.	E.
36. Care about each other	F.	G.	H.	J.	K.
37. Competitive	A.	B.	C.	D.	E.

DO NOT WRITE ON THIS PAGE

38. The most popular students in this school are: (Choose only <u>one</u> answer)

F. Athletes

G. Smart students

H. Members of student government

J. Good-looking students

K. Wealthy students

Indicate whether or not you participate in the following activities at school. (Answer yes or no for each of the following).

	Yes	No
39. I participate in sports teams/drill team/flags/cheerleading.	A.	B.
40. I participate in student government.	F.	G.
41. I participate in music, band, drama, or other arts.	A.	B.
42. I participate in honor society.	F.	G.
43. I participate in school clubs/community service activities.	A.	B.

Below is a list of things which may be problems at this school. How much do you think each is a problem at this school?

	Not a Problem	Minor Problem	Major Problem
44. Student misbehavior (fighting, stealing, gangs, truancy, etc.)	F.	G.	H.
45. Poor courses or not enough different subjects offered	A.	B.	C.
46. Prejudice/Racial conflict	F.	G.	H.
47. Drugs	A.	B.	C.
48. Alcohol	F.	G.	H.
49. Poor teachers or teaching	A.	B.	C.
50. School too large/classes overcrowded	F.	G.	H.
51. Teachers don't discipline students.	A.	B.	C.
52. Poor or not enough buildings, equipment, or materials	F.	G.	H.
53. The principal and other people in the office who run the school	A.	B.	C.
54. Poor student attitudes (poor school spirit, don't want to learn)	F.	G.	H.
55. Too many rules and regulations	A.	B.	C.
56. How the school is organized (class schedules, not enough time for lunch, passing periods, etc.)	F.	G.	H.

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Issues and Problems:

Read each one of the following sentences carefully and choose the letter that tells how much you agree or disagree with what it says. CHOOSE ONLY ONE LETTER for each sentence. Please raise your hand if you have any questions.

	Strongly Agree	Mildly Agree	Not Sure	Mildly Disagree	Strongly Disagree
57. What I'm learning in school is useful for what I will need to know NOW.	A.	B.	C.	D.	E.
58. What I'm learning in school will be useful for what I will need to know LATER in life.	F.	G.	H.	J.	K.
59. I think students of different races or colors should go to school together.	A.	B.	C.	D.	E.
60. Girls get a better education than boys at this school.	F.	G.	H.	J.	K.
61. There are places at this school where I don't go because I'm afraid of other students.	A.	B.	C.	D.	E.
62. Boys get a better education than girls at this school.	F.	G.	H.	J.	K.
63. I do not have enough time to do my school work.	A.	B.	C.	D.	E.
64. High school students should have job experience as part of their school program.	F.	G.	H.	J.	K.
65. Many students at this school don't care about learning.	A.	B.	C.	D.	E.
66. Average students don't get enough attention at this school.	F.	G.	H.	J.	K.
67. Some of the things teachers want me to learn are just too hard.	A.	B.	C.	D.	E.
68. Too many students are allowed to graduate from this school without learning very much.	F.	G.	H.	J.	K.
69. If I had my choice, I would go to a different school.	A.	B.	C.	D.	E.
70. There are things I want to learn about that this school doesn't teach.	F.	G.	H.	J.	K.
71. It's not safe to walk to and from school alone.	A.	B.	C.	D.	E.

DO NOT WRITE ON THIS PAGE

	Strongly Agree	Mildly Agree	Not Sure	Mildly Disagree	Strongly Disagree
72. I have trouble reading the books and other materials in my classes.	F.	G.	H.	J.	K.
73. The grades or marks I get help me to learn better.	A.	B.	C.	D.	E.
74. I like school.	F.	G.	H.	J.	K.
75. The grades or marks I get in class have nothing to do with what I really know.	A.	B.	C.	D.	E.
76. I have to learn things without knowing why.	F.	G.	H.	J.	K.
77. Parents should have a say in what is taught at this school.	A.	B.	C.	D.	E.
78. It is easy for me to get help from a counselor when planning my school program.	F.	G.	H.	J.	K.
79. We are not given enough freedom in choosing our classes.	A.	B.	C.	D.	E.
80. We are not given enough freedom in choosing our teachers.	F.	G.	H.	J.	K.
81. If I have a personal problem, it would be easy for me to get help from a counselor.	A.	B.	C.	D.	E.
82. If you don't want to go to college, this school doesn't think you're very important.	F.	G.	H.	J.	K.
83. Students should have a say in what is taught at this school.	A.	B.	C.	D.	E.
84. A person is foolish to keep going to school if he/she can get a job.	F.	G.	H.	J.	K.
85. If I need help planning for a career, it would be easy for me to get help from a counselor.	A.	B.	C.	D.	E.
86. I like the way this school looks.	F.	G.	H.	J.	K.
87. It is easy to get books from the school library.	A.	B.	C.	D.	E.
88. Things in the school library are useful to me.	F.	G.	H.	J.	K.
89. Materials in the Career Guidance Center (CGC) are useful to me.	A.	B.	C.	D.	E.

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Questions About Teaching, Learning & Classroom Work

All schools teach pretty much the same things, but they may think some things are more important than others. . .

90. Which ONE of these does this school think is the most important thing for students? (Choose only one)

F. To work well with other people
G. To learn the basic skills in reading, writing, arithmetic, and other subjects
H. To become a better person
J. To get a good job

91. If you had to choose only the ONE most important thing for you, which would it be? (Choose only one)

A. To work well with other people
B. To learn the basic skills in reading, writing, arithmetic, and other subjects
C. To become a better person
D. To get a good job

In general, how do you like the following subjects?

	Like Very Much	Like Somewhat	Undecided	Dislike Somewhat	Dislike Very Much
92. English	F.	G.	H.	J.	K.
93. Mathematics	A.	B.	C.	D.	E.
94. Social studies (history, geography, government, etc.)	F.	G.	H.	J.	K.
95. Science	A.	B.	C.	D.	E.
96. Computer Education	F.	G.	H.	J.	J.
97. The Arts (art, crafts, music, drama, dance, creative writing, film-making, photography)	A.	B.	C.	D.	E.
98. Foreign Language	F.	G.	H.	J.	K.
99. Vocational/Career Education (shop, business education, home economics, etc.)	A.	B.	C.	D.	E.
100. Physical Education	F.	G.	H.	J.	K.

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101. How many hours of homework do you have each day?
   A. None
   B. About 1 hour
   C. About 2 - 3 hours
   D. About 4 - 5 hours
   E. More than 5 hours

102. In general, how often do you do your homework?
   F. All of the time
   G. Most of the time
   H. Sometimes
   J. Seldom
   K. Never

103. How soon do teachers usually return your work?
   A. the next day
   B. 2 days later
   C. 3 days later
   D. 4 days later
   E. 5 days later or more

104. When you make mistakes in your work, how often do teachers tell you how to do it correctly?
   F. All of the time
   G. Most of the time
   H. Only sometimes
   J. Seldom
   K. Never

105. How often do your parents or other family members help you with your school work?
   A. All of the time
   B. Most of the time
   C. Only sometimes
   D. Seldom
   E. Never

Listed below are four ways students can work in a classroom. Choose the letter on the answer sheet that tells how much you like or would like to work in each way, even if you don't do so now.

	Like Very Much	Like Somewhat	Undecided	Dislike Somewhat	Dislike Very Much
106. Alone by myself	F.	G.	H.	J.	K.
107. With the whole class	A.	B.	C.	D.	E.
108. With a small group of students, who know as much as I do	F.	G.	H.	J.	K.
109. With a small group of students, some who know less, some who know as much, and some who know more than I do	A.	B.	C.	D.	E.

DO NOT WRITE ON THIS PAGE

Listed below are some things that might be used in a class. Choose the letter on the answer sheet that tells how much you like or would like to use each thing, even if you don't use it in a classroom.

	Like Very Much	Like Somewhat	Undecided	Dislike Somewhat	Dislike Very Much
110. Textbooks	F.	G.	H.	J.	K.
111. Other books	A.	B.	C.	D.	E.
112. Work sheets	F.	G.	H.	J.	K.
113. Films, filmstrips, or slides	A.	B.	C.	D.	E.
114. Games or simulations	F.	G.	H.	J.	K.
115. Newspapers or magazines	A.	B.	C.	D.	E.
116. Tape recordings or records	F.	G.	H.	J.	K.
117. Television/video	A.	B.	C.	D.	E.
118. Calculators	F.	G.	H.	J.	K.
119. Globes, maps, and charts	A.	B.	C.	D.	E.
120. Animals and plants	F.	G.	H.	J.	K.
121. Lab equipment and materials	A.	B.	C.	D.	E.
122. Computers	F.	G.	H.	J.	K.

Listed below are some things that you might do in a class. Choose the letter on the answer sheet that tells how much you like or would like to do each thing, even if you don't do it in class.

	Like Very Much	Like Somewhat	Undecided	Dislike Somewhat	Dislike Very Much
123. Listen to the teacher	A.	B.	C.	D.	E.
124. Go on field trips	F.	G.	H.	J.	K.
125. Do research and write reports, stories, or poems	A.	B.	C.	D.	E.
126. Listen to student reports	F.	G.	H.	J.	K.
127. Listen to speakers who come to class	A.	B.	C.	D.	E.
128. Have class discussions	F.	G.	H.	J.	K.
129. Build or draw things	A.	B.	C.	D.	E.
130. Do problems or write answers to questions	F.	G.	H.	J.	K.

DO NOT WRITE ON THIS PAGE

	Like Very Much	Like Somewhat	Undecided	Dislike Somewhat	Dislike Very Much
131. Take tests or quizzes	A.	B.	C.	D.	E.
132. Make films or recordings	F.	G.	H.	J.	K.
133. Act things out	A.	B.	C.	D.	E.
134. Read for fun or interest	F.	G.	H.	J.	K.
135. Read for information	A.	B.	C.	D.	E.
136. Interview people	F.	G.	H.	J.	K.
137. Do projects or experiments that are already planned	A.	B.	C.	D.	E.
138. Do projects or experiments that I plan	F.	G.	H.	J.	K.

Please indicate how important each of the following items was in your choice of classes here at _____ High School.

	Very Important	Important	Not Sure	Not Important	Very Unimportant
139. Taking classes from teachers I like	A.	B.	C.	D.	E.
140. Being in the same classes as my friends	F.	G.	H.	J.	K.
141. Completing graduation requirements	A.	B.	C.	D.	E.
142. Learning skills for a future job	F.	G.	H.	J.	K.
143. Taking classes that will help me be a better person	A.	B.	C.	D.	E.
144. Being challenged by taking hard subjects	F.	G.	H.	J.	K.
145. Taking classes that will prepare me for the future	A.	B.	C.	D.	E.
146. Getting a wide variety of classes	F.	G.	H.	J.	K.
147. Preparing for college	A.	B.	C.	D.	E.
148. Taking classes requiring little work	F.	G.	H.	J.	K.
149. Avoiding subjects I don't like	A.	B.	C.	D.	E.
150. Taking classes that are popular	F.	G.	H.	J.	K.
151. Taking classes my parent(s) consider important	A.	B.	C.	D.	E.
152. Taking classes where I can get good grades	F.	G.	H.	J.	K.

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Questions About the Learning Resource Center (LRC)

153. Have you heard of the Learning Resource Center?
   A. yes
   B. no

154. If yes, how often have you gone with your classes to the Learning Resource Center?
   F. Never
   G. Only once or twice
   H. About once or twice a month
   J. About once or twice a week
   K. Almost every day

155. How often have you gone to the Learning Resource Center by yourself?
   A. Never
   B. Only once or twice
   C. About once or twice a month
   D. About once or twice a week
   E. Almost every day

If you have ever used the Learning Resource Center, have you used any of these services? (Answer yes or no for each of the following).

	Yes	No
156. Diagnostic testing for reading and math problems	F.	G.
157. Entry testing for proper class placement	A.	B.
158. Assistance with assignments from classroom teacher	F.	G.
159. Work on tasks assigned by the Learning Resource Center	A.	B.
160. After school seminars	F.	G.
161. Study hall	A.	B.
162. SAT preparation	F.	G.
163. Proficiency test preparation	A.	B.
164. Use the computer	F.	G.
165. Sophomore study skills	A.	B.
166. Language laboratory	F.	G.
167. Assistance in researching or typing papers	A.	B.
168. Use the typewriter	F.	G.
169. Receive individual tutoring	A.	B.
170. Develop library/research skills	F.	G.
171. Develop reading skills	A.	B.
172. Develop writing skills	F.	G.
173. Develop math skills	A.	B.
174. Develop listening skills	F.	G.
175. Develop test taking skills	A.	B.

DO NOT WRITE ON THIS PAGE

176. Have you received credit for Writing I through the Learning Resource Center?
F. yes
G. no

177. Have you received credit for Developmental Reading through the Learning Resource Center?
A. yes
B. no

	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
178. The Learning Resource Center is helping students at Royal.	F.	G.	H.	J.	K.
179. Most students know about the resources available in the Learning Resource Center.	A.	B.	C.	D.	E.
180. I have been helped by the services of the Learning Resource Center.	F.	G.	H.	J.	K.
181. I am comfortable about using the services of the Learning Resource Center.	A.	B.	C.	D.	E.
182. My work in the Learning Resource Center has helped me in my courses.	F.	G.	H.	J.	K.
183. My work in the Learning Resource Center has made me feel more secure about my ability to do the work assigned by my teachers.	A.	B.	C.	D.	E.

Questions About the Career Magnet School

	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
184. I understand what the Career Magnet School program is trying to do.	F.	G.	H.	J.	K.
185. I would like more information about the Career Magnet Schools.	A.	B.	C.	D.	E.

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Attachment 2

High School Student Survey
Incoming Sophomores
August 22-23, 1984

The survey you are about to complete will ask you questions about yourself and about your experiences at school. This is not a test. There are no right or wrong answers. It is important to answer the questions as truthfully and as carefully as possible.

DO NOT WRITE ON THESE PAGES

MARK YOUR ANSWERS ON THE ANSWER SHEET PROVIDED. You will notice that answers go from A to E or from F to K. This does not matter. Simply choose the one answer that best fits your opinion for each question. MARK ONLY ONE LETTER ON THE ANSWER SHEET FOR EACH QUESTION. For example, if you chose answer B for question number 5, you would mark the answer sheet like this:

Or, if you chose answer J for question number 6, you would mark the answer sheet like this:

Remember, mark only one letter on the answer sheet for each question. If there are any words or questions you don't understand, please raise your hand and ask for help.

DO NOT BEGIN UNTIL YOU RECEIVE MORE INSTRUCTIONS

This question will be answered differently than the others. You will use the blue box at the top of the answer sheet. Read the list of Career Magnet Schools below.

1. Physical Science and Technology
2. International Relations & Political Science
3. Business
4. Industry
5. Performing, Visual and Fine Arts
6. Mental, Physical & Biological Sciences
7. Liberal Arts
8. Entry and Essentials
9. Don't Know

Now, using the last column of the blue box (to the far right), mark the number on the answer sheet that matches your career magnet school.

Starting with number 1 on the survey, the rest of the questions will be answered in the white area of the answer sheet. Remember, do not mark on the survey sheets themselves. Mark one answer for each question on the answer sheet.

Questions About Yourself

1. Sex:

   A. Male
   B. Female

2. Besides English, what other languages are spoken in your home:

   F. None
   G. Spanish
   H. Vietnamese
   J. Chinese
   K. Other

3. Living situation:

   A. With two parents (includes stepparents)
   B. With one parent only (mother or father only)
   C. Guardian(s)/foster parents
   D. Alone or with friends
   E. Other

4. About how many hours a week do you usually spend working on a job during the school year?

   F. None. I am not employed during the school year.
   G. About 10 hours or less
   H. About 15 - 20 hours
   J. About 20 - 30 hours
   K. More than 30 hours

5. How many hours do you watch television each day?

   A. None
   B. About 1 hour
   C. About 2 - 3 hours
   D. About 4 - 5 hours
   E. More than 5 hours

Choose the ONE answer that best completes each of the following sentences.

6. If I could do anything I want, I would like to:

   F. Quit school as soon as possible.
   G. Finish high school.
   H. Go to trade/technical school or junior college.
   J. Go to a 4-year college or university.
   K. Don't know.

7. I think my parents would like me to:

   A. Quit school as soon as possible.
   B. Finish high school.
   C. Go to trade/technical school or junior college.
   D. Go to a 4-year college or university.
   E. Don't know.

DO NOT WRITE ON THIS PAGE

8. Actually, I will probably:

F. Quit school as soon as possible.
G. Finish high school.
H. Go to trade/technical school or junior college.
J. Go to a 4-year college or university.
K. Don't know.

9. How comfortable do you feel about choosing a future career goal at this point in your life?

A. Very Uncomfortable
B. Uncomfortable
C. Neither Uncomfortable or Comfortable
D. Comfortable
E. Very Comfortable

The following sentences describe some of the ways in which people might think about themselves.

Read each of the following sentences carefully and mark the letter on the answer sheet that tells how much it is like you.

Look at the following practice sentence and mark the letter on the answer sheet that tells how much you agree or disagree with the sentence.

PRACTICE	Strongly Agree	Mildly Agree	Not Sure	Mildly Disagree	Strongly Disagree
I am good at art	A.	B.	C.	D.	E.

If you Choose "Strongly Agree," you're saying that you are very good at art. If you choose "Mildly Agree," you're saying that you are OK at art. If you choose "Mildly Disagree," you're saying that you are not too good at art. If you choose "Strongly Disagree," you're saying that you are very poor at art.

	Strongly Agree	Mildly Agree	Not Sure	Mildly Disagree	Strongly Disagree
10. I'm popular with kids my own age.	F.	G.	H.	J.	K.
11. Kids usually follow my ideas.	A.	B.	C.	D.	E.
12. Most people are better liked than I am.	F.	G.	H.	J	K.
13. It is hard for me to make friends.	A.	B.	C.	D.	E.
14. I have no real friends.	F.	G.	H.	J.	K.
15. I'm not doing as well as I'd like to in school.	A.	B.	C.	D.	E.
16. I am a good reader.	F.	G.	H.	J.	K.
17. I'm proud of my schoolwork.	A.	B.	C.	D.	E.
18. I'm good at math.	F.	G.	H.	J.	K.
19. I'm doing the best work that I can.	A.	B.	C.	D.	E.
20. I am able to do schoolwork at least as well as other students.	F.	G.	H.	J.	K.

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	Strongly Agree	Mildly Agree	Not Sure	Mildly Disagree	Strongly Disagree
21. My grades are not good enough.	A.	B.	C.	D.	E.
22. I'm always making mistakes in my schoolwork.	F.	G.	H.	J.	K.
23. I am a good writer.	A.	B.	C.	D.	E.

Questions About Your School Life

24. Who do you think the most popular students in this school are? (Choose only one answer)

F. Athletes
G. Smart students
H. Members of student government
J. Good-looking students
K. Wealthy students

Below is a list of things which may be problems at this school. How much do you think each is a problem at this school?

	Not a Problem	Minor Problem	Major Problem
25. Student misbehavior (fighting, stealing, gangs, truancy, etc.)	A.	B.	C.
26. Poor courses or not enough different subjects offered	F.	G.	H.
27. Prejudice/Racial conflict	A.	B.	C.
28. Drugs	F.	G.	H.
29. Alcohol	A.	B.	C.
30. Poor teachers or teaching	F.	G.	H.
31. School too large/classes overcrowded	A.	B.	C.
32. Teachers don't discipline students.	F.	G.	H.
33. Poor or not enough buildings, equipment, or materials	A.	B.	C.
34. The principal and other people in the office who run the school	F.	G.	H.
35. Poor student attitudes (poor school spirit, don't want to learn)	A.	B.	C.
36. Too many rules and regulations	F.	G.	H.
37. How the school is organized (class schedules, not enough time for lunch, passing periods, etc.)	A.	B.	C.

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Issues and Problems:

Read each one of the following sentences carefully and choose the letter that tells how much you agree or disagree with what it says. CHOOSE ONLY ONE LETTER for each sentence. Please raise your hand if you have any questions.

	Strongly Agree	Mildly Agree	Not Sure	Mildly Disagree	Strongly Disagree
38. What I'm learning in school is useful for what I will need to know NOW.	F.	G.	H.	J.	K.
39. What I'm learning in school will be useful for what I will need to know LATER in life.	A.	B.	C.	D.	E.
40. I think students of different races or colors should go to school together.	F.	G.	H.	J.	K.
41. I do not have enough time to do my school work.	A.	B.	C.	D.	E.
42. High school students should have job experience as part of their school program.	F.	G.	H.	J.	K.
43. Some of the things teachers want me to learn are just too hard.	A.	B.	C.	D.	E.
44. If I had my choice, I would go to a different school.	F.	G.	H.	J.	K.
45. It's not safe to walk to and from school alone.	A.	B.	C.	D.	E.
46. I have trouble reading the books and other materials in my classes.	F.	G.	H.	J.	K.
47. The grades or marks I get help me to learn better.	A.	B.	C.	D.	E.
48. I like school.	F.	G.	H.	J.	K.
49. The grades or marks I get in class have nothing to do with what I really know.	A.	B.	C.	D.	E.
50. I have to learn things without knowing why.	F.	G.	H.	J.	K.
51. Parents should have a say in what is taught at this school.	F.	G.	H.	J.	K.
52. We are not given enough freedom in choosing our classes.	A.	B.	C.	D.	E.
53. Students should have a say in what is taught at this school.	F.	G.	H.	J.	K.
54. A person is foolish to keep going to school if he/she can get a job.	A.	B.	C.	D.	E.
55. I like the way this school looks.	F.	G.	H.	J.	K.

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Questions About Teaching, Learning & Classroom Work

All schools teach pretty much the same things, but they may think some things are more important than others...

56. Which ONE of these do you think this school believes is the most important thing for students? (Choose only one)

    A. To work well with other people
    B. To learn the basic skills in reading, writing, arithmetic, and other subjects
    C. To become a better person
    D. To get a good job

57. If you had to choose only the ONE most important thing for you to learn in school, which would it be? (Choose only one)

    F. To work well with other people
    G. To learn the basic skills in reading, writing, arithmetic, and other subjects
    H. To become a better person
    J. To get a good job

In general, how do you like the following subjects? If you have never had some of these subjects, how much do you think you would like them?

	Like Very Much	Like Somewhat	Undecided	Dislike Somewhat	Dislike Very Much
58 English	A.	B.	C.	D.	E.
59. Mathematics	F.	G.	H.	J.	K.
60. Social studies (history, geography, government, etc.)	A.	B.	C.	D.	E.
61. Science	F.	G.	H.	J.	K.
62. Computer Education	A.	B.	C.	D.	E.
63. The Arts (art, crafts, music, drama, dance, creative writing, film-making, photography)	F.	G.	H.	J.	K.
64. Foreign Language	A.	B.	C.	D.	E.
65. Vocational/Career Education (shop, business education, home economics, etc.)	F.	G.	H.	J.	K.
66. Physical Education	A.	B.	C.	D.	E.

67. In general, how often do you do your homework?

    F. All of the time
    G. Most of the time
    H. Sometimes
    J. Seldom
    K. Never

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68. How often do your parents or other family members help you with your school work?

A. All of the time
B. Most of the time
C. Only sometimes
D. Seldom
E. Never

Listed below are four ways students can work in a classroom. Choose the letter on the answer sheet that tells how much you like or would like to work in each way, even if you don't do so now.

	Like Very Much	Like Somewhat	Undecided	Dislike Somewhat	Dislike Very Much
69. Alone by myself	F.	G.	H.	J.	K.
70. With the whole class	A.	B.	C.	D.	E.
71. With a small group of students, who know as much as I do	F.	G.	H.	J.	K.
72. With a small group of students, some who know less, some who know as much, and some who know more than I do	A.	B.	C.	D.	E.

Listed below are some things that might be used in a class. Choose the letter on the answer sheet that tells how much you like or would like to use each thing, even if you don't use it in a classroom.

	Like Very Much	Like Somewhat	Undecided	Dislike Somewhat	Dislike Very Much
73. Textbooks	F.	G.	H.	J.	K.
74. Other books	A.	B.	C.	D.	E.
75. Work sheets	F.	G.	H.	J.	K.
76. Films, filmstrips, or slides	A.	B.	C.	D.	E.
77. Games or simulations	F.	G.	H.	J.	K.
78. Newspapers or magazines	A.	B.	C.	D.	E.
79. Tape recordings or records	F.	G.	H.	J.	K.
80. Television/video	A.	B.	C.	D.	E.
81. Calculators	F.	G.	H.	J.	K.
82. Globes, maps, and charts	A.	B.	C.	D.	E.

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	Like Very Much	Like Somewhat	Undecided	Dislike Somewhat	Dislike Very Much
83. Animals and plants	F.	G.	H.	J.	K.
84. Lab equipment and materials	A.	B.	C.	D.	E.
85. Computers	F.	G.	H.	J.	K.

Listed below are some things that you might do in a class. Choose the letter on the answer sheet that tells how much you like or would like to do each thing, even if you don't do it in class.

	Like Very Much	Like Somewhat	Undecided	Dislike Somewhat	Dislike Very Much
86. Listen to the teacher	A.	B.	C.	D.	E.
87. Go on field trips	F.	G.	H.	J.	K.
88. Do research and write reports, stories, or poems	A.	B.	C.	D.	E.
89. Listen to student reports	F.	G.	H.	J.	K.
90. Listen to speakers who come to class	A.	B.	C.	D.	E.
91. Have class discussions	F.	G.	H.	J.	K.
92. Build or draw things	A.	B.	C.	D.	E.
93. Do problems or write answers to questions	F.	G.	H.	J.	K.
94. Take tests or quizzes	A.	B.	C.	D.	E.
95. Make films or recordings	F.	G.	H.	J.	K.
96. Act things out	A.	B.	C.	D.	E.
97. Read for fun or interest	F.	G.	H.	J.	K.
98. Read for information	A.	B.	C.	D.	E.
99. Interview people	F.	G.	H.	J.	K.
100. Do projects or experiments that are already planned	A.	B.	C.	D.	E.
101. Do projects or experiments that I plan	F.	G.	H.	J.	K.

Questions About the Learning Resource Center (LRC)

102. Have you heard of the Learning Resource Center?

A. yes
B. no

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Questions About the Career Magnet School

	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
103. I understand what the Career Magnet School program is trying to do.	F.	G.	H.	J.	K.
104. I would like more information about the Career Magnet Schools.	A.	B.	C.	D.	E.

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Attachment 3

High School-CSEUCLA COLLABORATION

Working Group Meeting
February 22, 1984

Suggested Topics for Consideration

1. Identify the kinds of information teachers, counselors, and building administrators view to be useful for their own work (student-level, class-level, school-level and program-level decisions).

2. Identify what specific problems (at any level) Royal High Staff would expect the information system to help them address.

3. Ascertain level of understanding of the computerized information currently available to school staff and the services that can be provided.

4. Discuss the extent to which the system meets current and anticipated needs.

5. Determin what additional information may be necessary to augment the system

6. Develop methods for collecting any additional information.

7. Identify the information that will be useful for characterizing the functioning and impact of the Career Magnet School (or other programs).

Attachment 4

Brief Project Summary

A Comprehensive Information System for
Local School Improvement

A Collaborative Research Project
Between High School,
Valley Unified School District, and
UCLA, Graduate School of Education

A lot of activity directed toward the development and use of information systems in school improvement efforts has been initiated over the past several years. Most of the developments thus far have occurred at the elementary school level, and most of these have been limited to the monitoring of test data.

The idea that schools, both elementary and secondary, need information above and beyond ordinary achievement outcomes to effect decisions, take actions, and evaluate improvement efforts is almost self-evident. While test scores certainly serve diverse functions in school, they are merely one set of indicators of how the culture of the school functions and, as such, are best understood within the school context through knowledge of the motivations, interests, and activities of the school constituencies.

Many concerns on the part of teachers and administrators at the class and school levels, and staff at the district level, can be envisioned that can be significantly informed through the judicious collection and analysis of pertinent information such as: attendance, student programs, tracking structures, student transiency, participations in extra curricular activities, class sizes and compositions, instructional activities, and the opinions and attitudes of students, teachers, parents and administrators.

We are studying these and other emerging questions by examining how information use becomes part of the decision-making and change processes within a school. Our collaborative work with High School has provided the perfect opportunity for reality-testing the idea since the Valley Unified School District has already begun to accumulate a diverse set of data on its students and programs using a computerized information system.

The work we are currently undertaking is a project of both the Center for the Study of Evaluation and the Laboratory in School and Community Education (via THE PARTNERSHIP), units of UCLA's Graduate School of Education. Current and anticipated activities include (but are not limited) to the following:

A. Instituting the kinds of data collection activities that may be necessary to establish the system's comprehensiveness (e.g., ongoing and pre- and post-graduate student surveys, teacher and parent surveys, additional school-level data, etc.).

B. Organizing and structuring information files in a way amenable to the manipulations and analyses required of the data (e.g., student files, teacher and parent files, aggregated files at class and school levels, etc.).

C. Investigating the optimal balance of hardware, software, and human resources required to make the system:

   1. Efficient with respect to data entry, updating, and data transfer between district and school.

   2. Accessible and timely to school administrators, teachers, and district level staff.

D. Developing and utilizing the simplest, but most meaningful, methods of data manipulation and analyses.

E. Developing and testing report formats that maximize both meaning and interpretation by the intended audiences.

F. Gathering case-study material through observations and interviews (of and with district and school staff) regarding decision-making with respect to developing, implementing and applying information systems.

It is interesting to note that this current effort at High School is the first sustained (and hopefully enduring) involvement that has occurred out of over two years of Valley-UCLA collaborations. This should not be interpreted negatively. Rather, it reinforces what we have experienced and learned from many school improvement efforts--school renewal and change is not an overnight phenomenon. Certainly each effort has its own story to tell, but all efforts are based upon considerable investments of time and energy toward the mutual building of trust and understanding. And there is the other ingredient deserving special mention--people, exceptional people (teachers and district and building level administrators) willing to try to overcome the day-to-day obstacles in the circumstances of schooling that make difficult the time consuming activities essential to school improvement efforts.

Attachment 5
Distribution of student responses to Spring Survey
reported in terms of percentages completing the survey

Questions About Yourself

1. Sex:
49 A. Male
51 B. Female

2. Besides English, what other languages are spoken in your home:
77 F. None
10 G. Spanish
1 H. Vietnamese
1 J. Chinese
10 K. Other

3. Living situation:
78 A. With two parents (includes stepparents)
15 B. With one parent only (mother or father only)
3 C. Guardian(s)/foster parents
1 D. Alone or with friends
3 E. Other

4. About how many hours a week do you usually spend working on a job during the school year?
50 F. None. I am not employed during the school year.
14 G. About 10 hours or less
18 H. About 15 - 20 hours
13 J. About 20 - 30 hours
6

5. How many hours do you watch television each day?
14 A. None
38 B. About 1 hour
36 C. About 2 - 3 hours
8 D. About 4 - 5 hours
4 E. More than 5 hours

Choose the ONE answer that best completes each of the following sentences.

6. If I could do anything I want, I would like to:

3 F. Quit school as soon as possible.
19 G. Finish high school.
22 H. Go to trade/technical school or junior college.
50 J. Go to a 4-year college or university.
6 K. Don't know.

7. I think my parents would like me to:

1 A. Quit school as soon as possible.
19 B. Finish high school.
15 C. Go to trade/technical school or junior college.
62 D. Go to a 4-year college or university.
4 E. Don't know.

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8. Actually, I will probably:

1 F. Quit school as soon as possible.
23 G. Finish high school.
30 H. Go to trade/technical school or junior college.
40 J. Go to a 4-year college or university.
6 K. Don't know.

9. How comfortable do you feel about choosing a future career goal at this point in your life?
10 A. Very Uncomfortable
13 B. Uncomfortable
34 C. Neither Uncomfortable or Comfortable
31 D. Comfortable
12 E. Very Comfortable

The following sentences describe some of the ways in which people might think about themselves.

Read each of the following sentences carefully and mark the letter on the answer sheet that tells how much it is like you.

Look at the following practice sentence and mark the letter on the answer sheet that tells how much you agree or disagree with the sentence.

PRACTICE	Strongly Agree	Mildly Agree	Not Sure	Mildly Disagree	Strongly Disagree
I am good at art	A.	B.	C.	D.	E.

If you Choose "Strongly Agree," you're saying that you are very good at art. If you choose "Mildly Agree," you're saying that you are OK at art. If you choose "Mildly Disagree," you're saying that you are not too good at art. If you choose "Strongly Disagree," you're saying that you are very poor at art.

	Strongly Agree	Mildly Agree	Not Sure	Mildly Disagree	Strongly Disagree
10. I'm popular with kids my own age.	21	52	20	5	1
11. Kids usually follow my ideas.	12	47	29	9	3
12. Most people are better liked than I am.	6	13	32	29	19
13. It is hard for me to make friends.	4	11	5	27	52
14. I have no real friends.	3	4	4	10	79
15. I'm not doing as well as I'd like to in school.	36	32	5	14	12
16. I am a good reader.	39	37	11	8	5
17. I'm proud of my schoolwork.	16	37	17	19	11
18. I'm good at math.	22	33	14	17	14
19. I'm doing the best work that I can.	14	28	13	28	16
20. I am able to do schoolwork at least as well as other students.	46	32	14	6	2

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	Strongly Agree	Mildly Agree	Not Sure	Mildly Disagree	Strongly Disagree
21. My grades are not good enough.	27	32	8	18	15
22. I'm always making mistakes in my schoolwork.	5	16	16	40	23
23. I am a good writer.	21	38	21	14	7

Questions About Your School Life

How much do the following words describe most of the teachers at this school?

	Very Much	Pretty Much	Some-what	Only A Little Bit	Not at All
24. Friendly	11	51	27	8	3
25. Helpful	12	48	28	9	3
26. Have high hopes for us	12	28	36	18	7
27. Talk to us	18	39	27	12	3
28. Let us talk to them	17	37	29	13	4
29. Care about us	9	31	36	16	7
30. Do a good job	12	49	26	8	4

How much do the following words describe how you feel about most of the students at this school?

	Very Much	Pretty Much	Some-what	Only A Little Bit	Not at All
31. Friendly	13	51	28	7	2
32. Helpful	7	32	40	17	4
33. Have high hopes	8	28	43	16	4
34. Smart	7	41	41	9	2
35. Talk to each other	48	36	12	3	1
36. Care about each other	17	41	29	10	3
37. Competitive	41	32	20	5	2

DO NOT WRITE ON THIS PAGE

38. The most popular students in this school are: (Choose only one answer)

48 F. Athletes
3 G. Smart students
9 H. Members of student government
35 J. Good-looking students
3 K. Wealthy students

Indicate whether or not you participate in the following activities at school. (Answer yes or no for each of the following).

	Yes	No
39. I participate in sports teams/drill team/flags/cheerleading.	37	60
40. I participate in student government.	8	88
41. I participate in music, band, drama, or other arts.	17	79
42. I participate in honor society.	19	77
43. I participate in school clubs/community service activities.	26	71

Below is a list of things which may be problems at this school. How much do you think each is a problem at this school?

	Not a Problem	Minor Problem	Major Problem
44. Student misbehavior (fighting, stealing, gangs, truancy, etc.)	17	62	19
45. Poor courses or not enough different subjects offered	40	40	17
46. Prejudice/Racial conflict	66	26	7
47. Drugs	16	49	34
48. Alcohol	18	45	36
49. Poor teachers or teaching	33	48	17
50. School too large/classes overcrowded	59	31	9
51. Teachers don't discipline students.	57	34	8
52. Poor or not enough buildings, equipment, or materials	41	38	19
53. The principal and other people in the office who run the school	32	34	32
54. Poor student attitudes (poor school spirit, don't want to learn)	23	49	26
55. Too many rules and regulations	21	35	43
56. How the school is organized (class schedules, not enough time for lunch, passing periods, etc.)	12	28	58

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Issues and Problems:

Read each one of the following sentences carefully and choose the letter that tells how much you agree or disagree with what it says. CHOOSE ONLY ONE LETTER for each sentence. Please raise your hand if you have any questions.

	Strongly Agree	Mildly Agree	Not Sure	Mildly Disagree	Strongly Disagree
57. What I'm learning in school is useful for what I will need to know NOW.	21	40	16	16	7
58. What I'm learning in school will be useful for what I will need to know LATER in life.	34	33	15	10	8
59. I think students of different races or colors should go to school together.	67	11	7	3	10
60. Girls get a better education than boys at this school.	5	6	23	11	55
61. There are places at this school where I don't go because I'm afraid of other students.	6	8	6	10	68
62. Boys get a better education than girls at this school.	3	3	23	12	59
63. I do not have enough time to do my school work.	15	28	13	26	18
64. High school students should have job experience as part of their school program.	32	27	23	11	7
65. Many students at this school don't care about learning.	22	34	24	15	4
66. Average students don't get enough attention at this school.	17	29	29	17	6
67. Some of the things teachers want me to learn are just too hard.	12	21	17	29	20
68. Too many students are allowed to graduate from this school without learning very much.	19	22	23	17	16
69. If I had my choice, I would go to a different school.	11	8	21	18	42
70. There are things I want to learn about that this school doesn't teach.	29	24	18	15	13
71. It's not safe to walk to and from school alone.	5	8	11	15	60

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	Strongly Agree	Mildly Agree	Not Sure	Mildly Disagree	Strongly Disagree
72. I have trouble reading the books and other materials in my classes.	7	12	8	23	52
73. The grades or marks I get help me to learn better.	17	29	25	17	11
74. I like school.	19	41	14	12	12
75. The grades or marks I get in class have nothing to do with what I really know.	21	25	19	21	14
76. I have to learn things without knowing why.	18	27	21	19	13
77. Parents should have a say in what is taught at this school.	17	27	23	16	16
78. It is easy for me to get help from a counselor when planning my school program.	39	28	10	11	9
79. We are not given enough freedom in choosing our classes.	27	21	11	23	18
80. We are not given enough freedom in choosing our teachers.	49	19	8	12	10
81. If I have a personal problem, it would be easy for me to get help from a counselor.	19	17	26	14	23
82. If you don't want to go to college, this school doesn't think you're very important.	8	16	31	21	22
83. Students should have a say in what is taught at this school.	37	32	14	9	6
84. A person is foolish to keep going to school if he/she can get a job.	4	4	9	16	65
85. If I need help planning for a career, it would be easy for me to get help from a counselor.	35	26	18	11	8
86. I like the way this school looks.	14	42	18	16	9
87. It is easy to get books from the school library.	40	36	11	6	4
88. Things in the school library are useful to me.	32	41	15	7	4
89. Materials in the Career Guidance Center (CGC) are useful to me.	29	27	29	8	5

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Questions About Teaching, Learning & Classroom Work

All schools teach pretty much the same things, but they may think some things are more important than others. . .

90. Which ONE of these does this school think is the most important thing for students? (Choose only one)

7 F. To work well with other people
65 G. To learn the basic skills in reading, writing, arithmetic, and other subjects
13 H. To become a better person
10 J. To get a good job

91. If you had to choose only the ONE most important thing for you, which would it be? (Choose only one)

14 A. To work well with other people
24 B. To learn the basic skills in reading, writing, arithmetic, and other subjects
32 C. To become a better person
26 D. To get a good job

In general, how do you like the following subjects?

	Like Very Much	Like Somewhat	Undecided	Dislike Somewhat	Dislike Very Much
92. English	23	45	10	14	6
93. Mathematics	25	34	10	14	16
94. Social studies (history, geography, government, etc.)	20	31	13	16	16
95. Science	23	30	16	14	14
96. Computer Education	28	27	33	6	5
97. The Arts (art, crafts, music, drama, dance, creative writing, film-making, photography)	40	26	20	8	5
98. Foreign Language	13	26	24	16	21
99. Vocational/Career Education (shop, business education, home economics, etc.)	24	30	29	8	5
100. Physical Education	43	28	11	8	8

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101. How many hours of homework do you have each day?

14 A. None
40 B. About 1 hour
35 C. About 2 - 3 hours
5 D. About 4 - 5 hours
3 E. More than 5 hours

102. In general, how often do you do your homework?

21 F. All of the time
41 G. Most of the time
21 H. Sometimes
11 J. Seldom
3 K. Never

103. How soon do teachers usually return your work?

12 A. the next day
29 B. 2 days later
24 C. 3 days later
10 D. 4 days later
22 E. 5 days later or more

104. When you make mistakes in your work, how often do teachers tell you how to do it correctly?

10 F. All of the time
35 G. Most of the time
28 H. Only sometimes
18 J. Seldom
6 K. Never

105. How often do your parents or other family members help you with your school work?

7 A. All of the time
16 B. Most of the time
25 C. Only sometimes
28 D. Seldom
21 E. Never

Listed below are four ways students can work in a classroom. Choose the letter on the answer sheet that tells how much you like or would like to work in each way, even if you don't do so now.

	Like Very Much	Like Somewhat	Undecided	Dislike Somewhat	Dislike Very Much
106. Alone by myself	20	35	11	20	12
107. With the whole class	21	41	14	15	7
108. With a small group of students, who know as much as I do	39	35	12	6	5
109. With a small group of students, some who know less, some who know as much, and some who know more than I do	31	31	17	11	8

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Listed below are some things that might be used in a class. Choose the letter on the answer sheet that tells how much you like or would like to use each thing, even if you don't use it in a classroom.

	Like Very Much	Like Somewhat	Undecided	Dislike Somewhat	Dislike Very Much
110. Textbooks	11	38	14	22	12
111. Other books	10	39	26	15	6
112. Work sheets	14	40	15	17	10
113. Films, filmstrips, or slides	43	35	9	6	3
114. Games or simulations	39	29	16	7	4
115. Newspapers or magazines	18	37	23	12	5
116. Tape recordings or records	21	28	22	16	8
117. Television/video	54	31	6	3	1
118. Calculators	38	34	15	5	3
119. Globes, maps, and charts	20	34	20	13	9
120. Animals and plants	35	33	17	6	4
121. Lab equipment and materials	37	30	14	9	5
122. Computers	48	25	14	3	5

Listed below are some things that you might do in a class. Choose the letter on the answer sheet that tells how much you like or would like to do each thing, even if you don't do it in class.

	Like Very Much	Like Somewhat	Undecided	Dislike Somewhat	Dislike Very Much
123. Listen to the teacher	17	46	13	13	6
124. Go on field trips	60	23	8	3	2
125. Do research and write reports, stories, or poems	10	24	13	22	24
126. Listen to student reports	10	26	20	22	17
127. Listen to speakers who come to class	30	40	11	9	5
128. Have class discussions	40	32	11	7	5
129. Build or draw things	29	28	18	12	8
130. Do problems or write answers to questions	11	31	20	20	13

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	Like Very Much	Like Somewhat	Undecided	Dislike Somewhat	Dislike Very Much
131. Take tests or quizzes	5	25	15	27	23
132. Make films or recordings	24	23	29	11	8
133. Act things out	19	22	22	16	16
134. Read for fun or interest	38	31	13	8	5
135. Read for information	17	36	17	17	8
136. Interview people	17	24	24	17	12
137. Do projects or experiments that are already planned	20	37	17	13	7
138. Do projects or experiments that I plan	24	30	21	12	8

Please indicate how important each of the following items was in your choice of classes here at ___ High School.

	Very Important	Important	Not Sure	Not Important	Very Unimportant
139. Taking classes from teachers I like	58	23	6	6	2
140. Being in the same classes as my friends	32	33	11	15	3
141. Completing graduation requirements	74	12	3	3	2
142. Learning skills for a future job	60	24	6	2	2
143. Taking classes that will help me be a better person	46	31	10	4	2
144. Being challenged by taking hard subjects	22	33	19	13	6
145. Taking classes that will prepare me for the future	55	26	8	2	2
146. Getting a wide variety of classes	34	32	17	7	2
147. Preparing for college	48	24	13	5	3
148. Taking classes requiring little work	10	18	29	31	15
149. Avoiding subjects I don't like	22	24	22	17	7
150. Taking classes that are popular	9	17	28	27	12
151. Taking classes my parent(s) consider important	9	28	22	21	13
152. Taking classes where I can get good grades	22	30	18	17	5

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Questions About the Learning Resource Center (LRC)

153. Have you heard of the Learning Resource Center?

79 A. yes
8 B. no

154. If yes, how often have you gone with your classes to the Learning Resource Center?

22 F. Never
52 G. Only once or twice
10 H. About once or twice a month
3 J. About once or twice a week
2 K. Almost every day

155. How often have you gone to the Learning Resource Center by yourself?

50 A. Never
26 B. Only once or twice
8 C. About once or twice a month
3 D. About once or twice a week
3 E. Almost every day

If you have ever used the Learning Resource Center, have you used any of these services? (Answer yes or no for each of the following).

	Yes	No
156. Diagnostic testing for reading and math problems	8	72
157. Entry testing for proper class placement	8	72
158. Assistance with assignments from classroom teacher	16	64
159. Work on tasks assigned by the Learning Resource Center	10	70
160. After school seminars	8	71
161. Study hall	17	64
162. SAT preparation	10	70
163. Proficiency test preparation	11	70
164. Use the computer	18	62
165. Study skills	19	61
166. Language laboratory	11	69
167. Assistance in researching or typing papers	12	68
168. Use the typewriter	8	72
169. Receive individual tutoring	6	73
170. Develop library/research skills	9	71
171. Develop reading skills	9	70
172. Develop writing skills	10	69
173. Develop math skills	6	73
174. Develop listening skills	12	68
175. Develop test taking skills	14	65

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176. Have you received credit for Writing I through the Learning Resource Center?

4 F. yes
76 G. no

177. Have you received credit for Developmental Reading through the Learning Resource Center?

4 A. yes
76 B. no

	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
178. The Learning Resource Center is helping students at Royal.	16	32	32	4	3
179. Most students know about the resources available in the Learning Resource Center.	9	23	23	21	9
180. I have been helped by the services of the Learning Resource Center.	9	18	20	18	20
181. I am comfortable about using the services of the Learning Resource Center.	11	18	35	11	11
182. My work in the Learning Resource Center has helped me in my courses.	7	12	32	16	18
183. My work in the Learning Resource Center has made me feel more secure about my ability to do the work assigned by my teachers.	6	11	32	16	19

Questions About the Career Magnet School

	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
184. I understand what the Career Magnet School program is trying to do.	20	26	18	11	13
185. I would like more information about the Career Magnet Schools.	28	24	20	6	9

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Attachment 6

Distribution of student responses to Incoming Sophomore Survey
reported in terms of percentages completing the suvey

Questions About Yourself

1. Sex:

51 Male
59 Female

2. Besides English, what other languages are spoken in your home:

82 None
8 Spanish
1 Vietnamese
0 Chinese
8 Other

3. Living situation:

86 With two parents (includes stepparents)
11 With one parent only (mother or father only)
2 Guardian(s)/foster parents
0 Alone or with friends
1 Other

4. About how many hours a week do you usually spend working on a job during the school year?

81 None. I am not employed during the school year.
13 About 10 hours or less
4 About 15 - 20 hours
1 About 20 - 30 hours
1 More than 30 hours

5. How many hours do you watch television each day?

4 None
23 About 1 hour
52 About 2 - 3 hours
15 About 4 - 5 hours
6 More than 5 hours

Choose the ONE answer that best completes each of the following sentences.

6. If I could do anything I want, I would like to:

2 Quit school as soon as possible.
15 Finish high school.
13 Go to trade/technical school or junior college.
59 Go to a 4-year college or university.
11 Don't know.

7. I think my parents would like me to:

0 Quit school as soon as possible.
17 Finish high school.
12 Go to trade/technical school or junior college.
67 Go to a 4-year college or university.
4 Don't know.

8. Actually, I will probably:

1 Quit school as soon as possible.
22 Finish high school.
16 Go to trade/technical school or junior college.
54 Go to a 4-year college or university.
7 Don't know.

9. How comfortable do you feel about choosing a future career goal at this point in your life?

9 Very Uncomfortable
16 Uncomfortable
38 Neither Uncomfortable or Comfortable
27 Comfortable
10 Very Comfortable

The following sentences describe some of the ways in which people might think about themselves.

Read each of the following sentences carefully and mark the letter on the answer sheet that tells how much it is like you.

Look at the following practice sentence and mark the letter on the answer sheet that tells how much you agree or disagree with the sentence.

PRACTICE	Strongly Agree	Mildly Agree	Not Sure	Mildly Disagree	Strongly Disagree
I am good at art	A.	B.	C.	D.	E.

If you Choose "Strongly Agree," you're saying that you are very good at art. If you choose "Mildly Agree," you're saying that you are OK at art. If you choose "Mildly Disagree," you're saying that you are not too good at art. If you choose "Strongly Disagree," you're saying that you are very poor at art.

	Strongly Agree	Mildly Agree	Not Sure	Mildly Disagree	Strongly Disagree
10. I'm popular with kids my own age.	15	59	22	4	1
11. Kids usually follow my ideas.	9	45	37	7	2
12. Most people are better liked than I am.	5	19	34	29	13
13. It is hard for me to make friends.	5	11	8	32	43
14. I have no real friends.	2	2	4	9	83
15. I'm not doing as well as I'd like to in school.	27	32	11	16	14
16. I am a good reader.	32	39	16	10	3
17. I'm proud of my schoolwork.	16	40	20	16	8
18. I'm good at math.	25	36	16	15	9
19. I'm doing the best work that I can.	18	38	14	22	8
20. I am able to do schoolwork at least as well as other students.	47	31	17	4	1

	Strongly Agree	Mildly Agree	Not Sure	Mildly Disagree	Strongly Disagree
21. My grades are good enough.	20	29	11	19	21
22. I'm always making mistakes in my schoolwork.	4	18	23	38	17
23. I am a good writer.	14	33	32	14	7

Questions About Your School Life

24. Who do you think the most popular students in Royal High School are? (Choose only one answer)

40 Athletes
1 Smart students
14 Members of student government
42 Good-looking students
3 Wealthy students

Below is a list of things which may be problems at Royal High School. How much do you think each is a problem at this school?

	Not a Problem	Minor Problem	Major Problem
25. Student misbehavior (fighting, stealing, gangs, truancy, etc.)	15	49	35
26. Poor courses or not enough different subjects offered	59	30	11
27. Prejudice/Racial conflict	55	33	12
28. Drugs	21	36	43
29. Alcohol	23	37	38
30. Poor teachers or teaching	48	34	17
31. School too large/classes overcrowded	54	37	8
32. Teachers don't discipline students.	59	35	5
33. Poor or not enough buildings, equipment, or materials	55	32	13
34. The principal and other people in the office who run the school	73	21	6
35. Poor student attitudes (poor school spirit, don't want to learn)	27	49	24
36. Too many rules and regulations	40	41	18
37. How the school is organized (class schedules, not enough time for lunch, passing periods, etc.)	35	42	23

Issues and Problems:

Read each one of the following sentences carefully and choose the letter that tells how much you agree or disagree with what it says. CHOOSE ONLY ONE LETTER for each sentence. Please raise your hand if you have any questions.

	Strongly Agree	Mildly Agree	Not Sure	Mildly Disagree	Strongly Disagree
38. What I'm learning in school is useful for what I will need to know NOW.	28	34	23	11	4
39. What I'm learning in school will be useful for what I will need to know LATER in life.	56	27	11	4	3
40. I think students of different races or colors should go to school together.	71	13	6	3	8
41. I do not have enough time to do my school work.	14	28	23	23	14
42. High school students should have job experience as part of their school program.	34	37	21	5	3
43. Some of the things teachers want me to learn are just too hard.	12	33	23	22	10
44. If I had my choice, I would go to a different school.	4	7	19	17	53
45. It's not safe to walk to and from school alone.	6	13	18	21	42
46. I have trouble reading the books and other materials in my classes.	4	11	14	21	50
47. The grades or marks I get help me to learn better.	31	27	28	8	7
48. I like school.	20	45	15	12	8
49. The grades or marks I get in class have nothing to do with what I really know.	11	19	22	24	24
50. I have to learn things without knowing why.	11	21	31	17	20
51. Parents should have a say in what is taught at this school.	18	26	30	15	11
52. We are not given enough freedom in choosing our classes.	14	22	18	27	19
53. Students should have a say in what is taught at this school.	24	28	21	15	12
54. A person is foolish to keep going to school if he/she can get a job.	4	5	13	19	60
55. I like the way this school looks.	24	38	28	8	2

Questions About Teaching, Learning & Classroom Work

All schools teach pretty much the same things, but they may think some things are more important than others...

56. Which ONE of these do you think this school believes is the most important thing for students? (Choose only one)

    10 To work well with other people
    55 To learn the basic skills in reading, writing, arithmetic, and other subjects
    20 To become a better person
    15 To get a good job

57. If you had to choose only the ONE most important thing for you to learn in school, which would it be? (Choose only one)

    13 To work well with other people
    38 To learn the basic skills in reading, writing, arithmetic, and other subjects
    24 To become a better person
    25 To get a good job

In general, how do you like the following subjects? If you have never had some of these subjects, how much do you think you would like them?

	Like Very Much	Like Somewhat	Undecided	Dislike Somewhat	Dislike Very Much
58 English	16	44	14	20	6
59. Mathematics	26	36	13	16	8
60. Social studies (history, geography, government, etc.)	25	33	15	16	11
61. Science	15	37	20	18	10
62. Computer Education	19	32	36	7	7
63. The Arts (art, crafts, music, drama, dance, creative writing, film-making, photography)	43	29	17	6	5
64. Foreign Language	12	31	29	13	15
65. Vocational/Career Education (shop, business education, home economics, etc.)	17	40	33	6	5
66. Physical Education	34	35	14	8	9

67. In general, how often do you do your homework?

    24 All of the time
    51 Most of the time
    19 Sometimes
     5 Seldom
     1 Never

68. How often do your parents or other family members help you with your school work?

5 All of the time
19 Most of the time
39 Only sometimes
28 Seldom
9 Never

Listed below are four ways students can work in a classroom. Choose the letter on the answer sheet that tells how much you like or would like to work in each way, even if you don't do so now.

	Like Very Much	Like Somewhat	Undecided	Dislike Somewhat	Dislike Very Much
69. Alone by myself	16	39	13	18	14
70. With the whole class	20	42	16	15	7
71. With a small group of students, who know as much as I do	41	40	13	5	2
72. With a small group of students, some who know less, some who know as much, and some who know more than I do	26	35	25	10	5

Listed below are some things that might be used in a class. Choose the letter on the answer sheet that tells how much you like or would like to use each thing, even if you don't use it in a classroom.

	Like Very Much	Like Somewhat	Undecided	Dislike Somewhat	Dislike Very Much
73. Textbooks	9	42	24	17	8
74. Other books	10	39	33	13	5
75. Work sheets	16	42	20	15	7
76. Films, filmstrips, or slides	48	35	8	6	3
77. Games or simulations	35	37	16	9	4
78. Newspapers or magazines	19	43	25	9	4
79. Tape recordings or records	24	30	24	15	6
80. Television/video	51	34	10	4	1
81. Calculators	38	38	15	5	5
82. Globes, maps, and charts	24	36	21	11	9

	Like Very Much	Like Somewhat	Undecided	Dislike Somewhat	Dislike Very Much
83. Animals and plants	37	33	20	6	4
84. Lab equipment and materials	32	37	18	7	6
85. Computers	38	31	21	5	5

Listed below are some things that you might do in a class. Choose the letter on the answer sheet that tells how much you like or would like to do each thing, even if you don't do it in class.

	Like Very Much	Like Somewhat	Undecided	Dislike Somewhat	Dislike Very Much
86. Listen to the teacher	21	49	17	10	3
87. Go on field trips	58	31	7	2	1
88. Do research and write reports, stories, or poems	11	25	18	22	24
89. Listen to student reports	10	31	27	19	12
90. Listen to speakers who come to class	28	42	19	8	3
91. Have class discussions	30	36	17	12	5
92. Build or draw things	29	32	23	10	6
93. Do problems or write answers to questions	11	29	31	19	10
94. Take tests or quizzes	6	22	18	31	23
95. Make films or recordings	23	28	35	8	6
96. Act things out	18	23	25	19	16
97. Read for fun or interest	35	35	18	7	6
98. Read for information	13	39	26	14	8
99. Interview people	15	24	32	17	11
100. Do projects or experiments that are already planned	19	40	22	10	8
101. Do projects or experiments that I plan	22	32	21	15	10

Questions About the Learning Resource Center (LRC)

102. Have you heard of the Learning Resource Center?

31 yes
68 no

MAKING SENSE OUT OF COMPREHENSIVE SCHOOL-BASED INFORMATION SYSTEMS

Exploring Analyses and Reporting Methods for School Staff

Kenneth A. Sirotnik and Leigh Burstein

INTRODUCTION

This is one of a series of reports based upon our ongoing reality test of the ideas embodied in our concept of systemic evaluation, the use of comprehensive data--data including but not limited to achievement outcomes--to inform school improvement efforts at all levels of the educational enterprise.

Over the first two years of this project, considerable conceptual and developmental work was accomplished that clarified the systemic evaluation idea and outlined the components and contents of comprehensive information systems useful at the building level. (See Burstein, 1983, 1984a-c; Sirotnik, 1984b; Sirotnik, Burstein & Thomas, 1983; and Sirotnik & Oakes, 1981a-b, 1982.) In a nutshell, this work included these contributions:

1. Developing an epistemological framework for using the knowledge afforded by a comprehensive information system in school renewal efforts.
2. Clarifying and integrating the basic research perspectives on contextual appraisal and multilevel design and analysis as adapted to the local school context.
3. Clarifying the distinctions between school and district perspectives on information systems and on the commonalities and differences in the information needs of elementary and secondary schools.
4. Elaborating the functions that comprehensive information systems serve within and between schools.
5. Identifying the likely contents (information domains) of a comprehensive information system for local school improvement.
6. Documenting the available sources of information routinely collected in schools.

7. Reviewing the routine data collection activities of a sample of school districts at various stages of trying to use information systems.

8. Developing an extensive array of possible survey, interview and observational instruments designed to collect non-achievement data that schools might include in their information systems.

Currently, we are "reality-testing" these concepts by gaining first-hand knowledge about how to develop and sustain a school-based information system for ongoing school improvement efforts. Essentially, we studying the evolution and consequences of a comprehensive information system in a specific high school setting by considering, in context, questions such as:

- How can such systems accommodate the diverse array of information needs at classroom, school and district levels?
- How can the information data bank be organized to meet a variety of needs on a day-to-day basis?
- What is the optimal balance of hardware and software at building levels?
- How can the system augment and stimulate processes of curriculum inquiry and school renewal.

The school selected for this reality test, is a three-year senior high school of approximately 2,000 students located in a two-high school suburban district (K-12 enrollment, approximately 20,000 students) just outside of the greater Los Angeles area. The selection of this site is responsive to both national and local concerns about secondary school reform and reflects a setting where a beginning computer-based information system already exists. The school is attempting to address pressing school problems such as high absenteeism and drop-out rates and the need for curricular reform to better accommodate student diversity and prepare students for post-graduation activities. There is also considerable interest in exploring how the computerized information system can

routinely serve both improvement and day-to-day school activities. These conditions at the high school make it ideal for studying the development and use of a comprehensive information system in secondary school improvement efforts.

Our basic modus operandi has been (and continues to be) to work hand-in-hand with a selected group of teachers, administrators, and counselors to develop the means whereby the district's extant information system can be modified and used to meet the needs at the school level. Towards this end, we have also been in close working relationship with district staff, particularly in the data processing division, so that any changes or additions can be easily implemented into existing hardware and software configurations.

Cutting across these working relationships have been these specific activities:

1. Instituting the kinds of data collection activities that may be necessary to establish the system's comprehensiveness (e.g., pre-, current, and post-graduate student surveys, teachers and parent surveys, additional school-level data entry, etc.).

2. Organizing and structuring information in a way amenable to the manipulations and analyses required of the data (e.g., student files, teacher and parent files, aggregated files at class and school levels, etc).

3. Investigating the optimal balance of hardware, software and human resources required to make the system:

   a. Efficient with respect to data entry, updating and data transfer between district and school.

   b. Accessible and timely to school administrators, teachers and district-level staff.

4. Developing and utilizing the simplest, but most meaningful, methods of data manipulation and analyses. Examples of the kinds of possible activities are:

   a. Targeted subgroup demographic descriptions.

   b. Univariate distributions of system variables.

c. Bivariate and multivariate cross-tabulations.

d. Bivariate plots.

e. Trend analyses.

5. Developing and testing reporting formats that maximize both meaning and interpretability by the intended audiences.

6. Gathering of case-study material through observations and interviews (of and with school and district staff) regarding decision-making with respect to developing, implementing and applying information systems.

The focus of this report is directly on activity 5 (and, perforce, on activity 4 as well). This report is basically organized into two sections detailing both the process and product aspects of developing and testing report formats that teachers and administrators find interpretable, meaningful and useful in their day-to-day work settings. Again, it must be emphasized that this is a report of work in progress; significant data are yet to be obtained on many utility issues concerning the reporting techniques discussed below.

PROCESSES

As already noted, much of our developmental work takes place collaboratively with school staff. Specifically a core group of five teachers (representing different subject matters), the principal and assistant principal, and sometimes a counselor, constitutes the primary vehicle for project input from the school. We will refer to these representatives of the school and ourselves, collectively, as the "work group."

Involving as many of the other 85 staff members at the high school in all aspects of this project would, of course, be useful--both for facilitating the use of the information system as an intrinsic part of

the school's planning process as well as providing us with more feedback on the objectives of the project. However, involvement of staff at this level of magnitude is a costly, time-consuming, and difficult task. We have been fortunate, for example, to be able to gain the release time necessary just to involve five teachers in this effort. Thus we have, in part, sacrificed exploring the consequences of a full-scale developmental effort with total staff involvement for the expediency and efficiency of a concentrated, small group work effort. Nonetheless, we have met with the total staff on two occasions--period-by-period meetings and pupil-free, minimum half day--in order to explain the purposes, processes and outcomes of the project, enlist their cooperation in the survey data collection activities, and update and share with them interim reports and reporting techniques. Moreover, the entire staff will be involved in testing and feedback regarding the several reports discussed in the next section.

We have also been meeting regularly with district level staff on basically two accounts: (1) Updating and negotiating with the assistant superintendent regarding the progress of the project and the material and resource needs as they occur; and (2) Working closely with the director and senior programmer in Data Processing in order to both study their information system's contents and capabilities and facilitate their processing and use of the new information (e.g., student survey data) collected at the school level.

Much of the project process that has taken place at both district and building levels are detailed elsewhere (see 1984 Deliverable by Darr-Bremme) and need not be repeated here. We will now consider the

more specific work-related efforts relevant to generating the analyses and reports based on the information system.

Initial Activities and Student Survey

The whole rationale for, and development and implementation of, additional survey data to be added to the extant information system is specifically addressed elsewhere (see 1984 Deliverable by Burstein). However, to set the context for what follows, several activities need to be reviewed.

Initial meetings were held with the work group to both orient all participants to the general purposes and scope of the project and then to attend to the details of these activities:

1. Identifying the kinds of information teachers, counselors, and building administrators view to be useful for their own work (student-level, class-level, school-level and program-level decisions).

2. Identifying what specific problems (at any level) that the school staff would expect the information system to help them address.

3. Ascertaining the level of understanding of the computerized information currently available to school staff and the services that can be provided.

4. Reviewing the contents of the extant computerized information system.

5. Discussing the extent to which the system meets current and anticipated needs.

6. Determining what additional information may be necessary to augment the system.

7. Developing plans for collecting any additional information.

8. Identifying the information that will be useful for characterizing the functioning and impact of other ongoing programs (e.g., SIP projects).

Among other things, it was clear from these activities that the teachers were aware of only some of the information and reports that were possible

to get from the extant system, the procedures for obtaining reports were slow, not always responsive, and not always flexible enough for specific needs, and that there were much more data of potential use that were not already in the information system. It was decided, therefore, that student, teacher, and parent surveys should be designed and field tested in that order of priority given available time and resources.

The next meetings of the work group centered directly around the task of constructing the student survey. This work was facilitated by the already available compendium of potential student survey items, pertaining to school level and classroom level issues, developed by the project last year (see 1983 Deliverable, Sirotnik, Burstein, & Thomas). Through an interactive process of dialog, sorting, sifting, prioritizing, revising, subtracting irrelevant items, and adding new ones, the work group converged on the 185-question survey in Appendix A to this report. This survey was administered to students in May 1984, was computerized and scored by the district's Data Processing department, and was subsequentialy analyzed at UCLA for the purposes of this project.

Analyses and Reporting Formats

The next major series of work group meetings focused on the likely analyses and reporting formats using student survey data and other system data that might capture the interests and information needs of school staff.

Initially, a two-day retreat was conducted wherein the work group pursued an in-depth descriptive analysis of the survey results based upon marginal response percentages (these data are printed along side the items in Appendix A). In addition, a semi-structured agenda was followed designed to engage the group to begin considering the various

ways in which the analyses could be visually presented. (A copy of the outline followed by the work group for these discussions is included in Appendix B.)

In retrospect, we may have over-structured these initial meetings in the sense that much of what we suggested by way of decision-making levels and report contents subsequently appeared in trial report forms discussed in the next section. Nonetheless, the perspective we brought to the use of information was well-substantiated in our previous conceptual and practical work on this project and in work done on A Study of Schooling (Goodlad, 1983). Moreover, we had already become quite familiar with the high school through our association with it over several years, and we knew of the staff's and administration's concern with problems such as student apathy, high absenteeism, and concern over the appropriate foci of the school's curricular emphases.

For whatever reasons, then, the work group resonated to this initial foray into the possible uses of data and the several data displays. Moreover, in the next couple of half-day work group meetings, the teachers, administrators and CSE staff worked very collaboratively on detailing the analyses and reporting formats most likely to be used by the high school staff. In the first of these meetings, in fact, one teacher came in armed with a list of variables that she felt were important pieces of information to have about students assigned to any particular class.

This list eventually evolved into the first of three basic information report ideas generated by the work group, mocked up by CSE staff, and brought back to, and refined by, the work group. These reports came to be known as the

- Students-At-A-Glance
- Class-At-A-Glance
- School-At-A-Glance

reports. We will discuss the details of designing and producing these reports in the next section. Suffice it to note here that this process was an interative one: ideas were generated by the work group; they were "brought back to the shop" and developed further by CSE staff; and they were presented again to the group until a working consensus was reached by all involved.

Throughout this process, connections with district level staff were maintained in several ways: (1) As part of our project objectives, our intent was to develop reporting techniques that were compatible with district technological capabilities and that would, in fact, be used by the district to produce the several report forms noted above. Thus, work group efforts in terms of concepts and products were generally within the parameters set by district capabilities. (2) Given the developmental nature of the project, a certain amount of exploratory data analytic and graphic display work needed to be done at CSE using computing facilities at UCLA. Thus, we secured permission from the district to receive and use copies of their basic information files used to construct their entire information system. (The district's system and files are briefly described in the outline contained in Appendix C.) (3) Several meetings with district staff were held primarily to maintain good will, reaffirm our commitments to the project and the high school-university collaborative endeavor, keep open channels of communication, and update staff on the progress of the project and the increasing commitments of the principal and teachers to actually using the evolving

reporting techniques. In one of these meetings (including CSE staff, the assistant superintendent, the director of data processing, and the principal), the district commitment was secured for the production of student and class reports for all teachers beginning the second semester of the 1984-85 school year.

Finally, once the trial information reports were developed and we were certain that the district would produce them for all teachers, a total staff meeting was planned and held in November 1984. The goals of this meeting were to reiterate the purposes and scope of the project, share the progress to date (including student survey results and the several report forms planned for dissemination), gain faculty-wide input to the process so far, inform staff of upcoming next-steps (e.g., possible teacher and parent surveys, second round of student surveying), and enlist more teacher volunteers to join the group. Particularly noteworthy, this meeting was planned and conducted mostly by the five teachers involved in the work group. Based upon input received from this meeting and the report forms generated by the work group, the district is currently developing the software necessary to produce the reports within the time frame noted above.

This process description, although brief, should be sufficient to set the stage for what follows, namely, a discussion of the actual analyses and tabulations of data determined by the work group to be potentially useful at the several levels of decision-making within the school. We will then conclude this report with a brief discussion of emerging issues and an outline of the final steps with respect to this segment of the project.

PRODUCTS

There is nothing inherent in information per se that automatically guarantees its usefulness. Even in the case of information generated at a conceptual level of need--for example, the student survey produced by the work group--judging the utility of data actually obtained is a whole new "ballgame." What seemed obviously interesting before (in "theory") is not always of obvious use when the data are actually at hand. This was one of the primary reasons for having teachers and administrators face the tasks of data analyst and report designer.

The details of how work group members attended and reacted to these tasks are extraordinarily intersting. We have only sketched out the structure of this in the process discussion above. Moreover, we will present mostly the outcomes of these deliberations next, adding only a few process descriptions as necessary. In the subsequent section, we will return to these process details only to support some emerging issues that we think deserve special mention. Again, readers interested in a more in-depth, process tracing should consult the 1984 Deliverable by Dorr-Bremme.

As noted previously, three types of data displays were generated by the work group: student-, class-, and school-at-a-glance reports. We will discuss each of these reports in terms of their evolution, contents and anticipated uses. (Information pertaining to their actual use will be collected in the 1985 project year.)

Student-At-A-Glance

Of the various levels at which information could be of use to school staff, teachers seemed to gravitate almost immediately to uses at the individual student level, particularly as that information might

impact upon their classroom instruction. Early on in the project, an interesting "tension" emerged between teachers' predispositions to relate, on the one hand, to individually-focused, diagnostic data and, on the other hand, to group or organizationally focused data (often aggregates of individual data). We have labelled these two perspectives regarding the use of information the clinical and the social orientations, respectively. The clinical-social theme is an important one in information use and we will return to it in the next section. Suffice it to say here that all teachers had no problems relating to the clinical perspective on information use--the main issues centered around what data to select and how to array them in a visually satisfying manner.

The work group already had a start on discussing these issues based upon a district version of a student information report (Exhibit 1) and also a preliminary outline submitted by one of the teachers. Interestingly, not all the teachers were even aware of the availability of the district report. Nevertheless, all teachers reacted somewhat negatively towards the report in terms of unclear variable definitions, a densely packed, difficult to read format, and both too much information and not always the most useful information was included.

Exhibit 2 shows the final test version of the student-at-a-glance report, designed to provide teachers with a student-by-student roster for each of their classes, with the information on each student given by the column headings and defined by the keys at the bottom of the report. This report was based upon a merged file created from five separate district files, including the student survey data. This merged file was then used as input to the report generator subprogram of the SPSS system set up to produce this particular report format. The district is

EXHIBIT 1

District's Student Report

```
LNARF 082140  SCH:33 GRADE:10 SP:    EC:E2 ED: 9/12/83 DOB: 6/25/68 SEX:G TCH:
NAME:ADAY, MADYLENE MARY        PO BOX:      EMRG1:BONNIE GASS      PH:805-526-349
ADDR: 1555- AGNEW ST             #     -     EMRG2:BONNIE NELSON    PH:805-522-326
CITY:SIMI VALLEY      ZIP:93065 DOCTR:DRUMMOND         PH:805-526-5240 RG:  /  /
PHONE:805-527-9188    BPL:CINCINNATI, O        LSCH:WM GREEN, LAWNDALE
FR:EUGENE O              OC:MILLWRIGHT         EMP:GENERAL MOTORS, VN
MR:MADYLENE              OC:                   EMP:
FP:213-997-5111 EXT:  40 MP:    -    -     EXT:      RES STATUS:BOTH PARENTS
LOCKER:          SIBLINGS: 1 PLACE: 2  ETHNICITY:4  GRID: 20    PSAT Q      V
G.P.A.:2.25  RANK: 355 OF  747  CTBS % MATH:    READ:    LANG:    SAT Q      V
A.F.D.C.:NO  HANDICAP:                          G.A.T.E.:NO  BILING:NO  SP ED:NO
ID CARD:NO   SCH RULES:NO  SMOKE PERM:NO  AUTO PERM:NO  OFF CAMP:NO  YR BOOK:YE
WORK EXP:NO  FREE PER:              LETTER SENT:                      CMS  1
VISITS: C.G.C.:    EUREKA:    LIBRARY:     HEALTH OFF:    PRINCIPAL:    PSYC:
A.S.B.:YES ATHLETICS:NO  OTHER ACTIVITY:NO  GROUPS:59
            R E F E R R A L  I N F O R M A T I O N  PAGE <01>
REF NO    PERSON MAKING REFERRAL      DATE   PERIOD       PERSON REFERRED TO
 0001  GUTHRIE                      09/14/82   05     BLACKBURN
     TYPE:  19 TRUANCY TARDIES               DISP:  27 PARENT CONFERNCE PHONE
 0002  HIRD                         09/15/82   01     FISCHER
     TYPE:  15 SMOKING                       DISP:  25 SCHOOL SUSPENSION
                                      /  /
     TYPE:                                   DISP:
```

SECTION:
TEACHER:

EXHIBIT 2

STUDENTS-AT-A-GLANCE

PREPARED ON 10 OCT 84

STUDENT NUMBER	STUDENT NAME	GRADE	CM SCHOOL	ED EXPECT	DAYS ABS	CTBS READ	CTBS LANG	CTBS MATH	GPA	ACAD SC	HOMEWORK	JOB	ACTIVITY	LIKE SCH
C1149043	ADAMS, WILLIAM B	12	.	4Y	.	.	.	.	1.1	H	+	P	3	+
C249052	ANDERSON, JOHN L	.	.	HS	.	.	.	.	.	M	+	P	0	+
0341950	ATWOOD, DANIEL K	12	6	HS	57	33	14	3	1.9	M	-	H	0	-
0449274	BAGLEY, LOIS J	12	3	4Y	35	82	84	83	2.6	M	0	H	2	+
0542468	BAKER, MARY M	12	3	2Y	17	34	54	3	1.8	H	+	N	2	+
0649341	BUTLER, JOYCE	12	3	2Y	18	49	67	0	2.7	H	+	N	0	+
0743686	CALDWELL, THOMAS C	12	4	2Y	11	80	88	80	1.6	M	0	N	0	+
C849048	CARTER, MATHEW	12	6	2Y	23	68	72	68	2.9	M	+	N	4	+
0942771	CLARK, LARRY P	12	6	HS	30	.	.	3	1.5	H	-	N	0	-
1C49050	COOK, CHERYL	11	6	?	13	83	86	68	3.0	M	0	P	1	-
1143177	COOPER, JANE L	12	6	.	55	36	26	35	1.4	.	.	.	.	.
1244197	CURTIS, EDWARD N	12	6	4Y	27	19	7	7	2.1	M	+	P	3	+
1349266	DAVIS, LYNN	12	1	4Y	7	66	84	95	3.8	H	+	P	3	+
1449288	DUNCAN, JOHN	12	2	4Y	8	87	94	83	3.6	H	+	N	3	+
1541828	EATON, TIMOTHY	12	6	2Y	37	10	12	2	2.4	M	0	P	1	+
1649291	EMERSON, DOROTHY A	12	7	2Y	11	45	62	40	2.6	H	-	P	0	+
1749069	EVANS, ROBIN S	12	4	2Y	31	41	20	10	2.2	M	+	P	0	+
1849294	FARMER, DAVID R	12	4	HS	35	.	.	.	2.1	M	+	N	0	-
1949295	FELDMAN, ROBERT	12	1	2Y	10	63	64	64	1.7	M	-	P	1	0
2049301	FINK, AARON S	12	1	4Y	6	88	96	99	4.1	H	+	P	2	+
2149303	HARRIS, CURLEY M	12	6	2Y	35	62	40	83	2.4	M	+	P	2	+
2249306	HAYES, CYNTHIA	12	4	2Y	17	1	3	.	2.5	M	-	H	0	-
2349167	KAPLAN, HAROLD D	12	5	2Y	27	61	8	32	2.5	M	0	H	0	+
2448395	LEWIS, ANTHONY E	.	3	.	43	50	35	35	.	.	.	.	.	.
2549168	MARCUS, STANLEY	12	4	4Y	10	83	77	92	3.2	H	+	N	3	+
2649309	MC ARTHUR, EUGENE A	12	6	4Y	35	80	70	60	2.8	M	+	N	2	+
2749172	MILLER, ELIZABETH	12	3	2Y	46	23	30	28	1.6	M	+	N	0	-
2843336	MCCBE, OSCAR J	12	2	2Y	32	78	50	3	2.9	M	+	N	0	-
2949129	PACE, DONALD W	12	2	2Y	30	16	28	45	1.6	M	-	N	1	-
3042520	RANDLE, ANN	12	6	4Y	47	.	.	.	2.1	M	+	P	0	0
3142793	ROBERTSON, SHEILA	12	6	4Y	30	99	74	43	2.5	M	+	P	0	+
3243660	ROSS, RICHARD M	12	5	HS	45	.	.	.8	M	-	P	.	0	
3343179	SANDERS, JOAN N	12	8	.	118	8	0	37	1.1	.	.	.	.	.
3449323	SCOTT, MARION J	12	5	2Y	27	47	49	31	2.1	M	+	P	0	+
3549109	SILVERMAN, ARTHUR	12	4	HS	10	61	74	26	1.9	M	-	H	0	+
3641481	SNYDER, EVELYN G	12	5	4Y	15	42	17	23	1.3	H	+	N	3	-
3744147	STERN, BRUCE D	12	6	2Y	56	54	73	40	2.9	H	+	P	2	+
3849262	STUART, DONNA	12	1	2Y	31	92	52	95	3.1	H	+	P	0	-
3949329	THOMPSON, WENDY L	12	8	2Y	27	63	50	60	3.0	M	+	H	1	-
4043580	WALKER, VICKI S	12	4	2Y	25	12	12	23	2.2	M	-	P	1	-

. = MISSING

CM SCHOOL: CAREER MAGNET SCHOOL.
1=PHYSICAL SCIENCE AND TECHNOLOGY
2=INTERNATIONAL RELATIONS & POLITICAL SCIENCE
3=BUSINESS 4=INDUSTRY 5=PERFORMING VISUAL AND FINE ARTS
6=MENTAL, PHYSICAL & BIOLOGICAL SCIENCES 7=LIBERAL ARTS
8=ENTRY AND ESSENTIALS 9=DONT KNOW

ED EXPECT: EDUCATIONAL EXPECTATION.
QU=QUIT HIGH SCHOOL HS=FINISH HIGH SCHOOL
2Y=GO TO TRADE/TECHNIC SCHOOL OR JUNIOR COLLEGE
4Y=GO TO 4-YEAR UNIVERSITY ?=DONT KNOW

DAYS ABS: NUMBER OF FULL DAYS ABSENT.

CTBS TEST RESULTS ARE REPORTED IN PERCENTILE RANK.

ACAD SC: ACADEMIC SELF CONCEPT. H=HIGH M=MEDIUM L=LOW

HOMEWORK: +=ALL/MOST OF THE TIME 0=SOMETIME -=SELDOM/NEVER

JOB: F=FULLTIME(30+) H=HALFTIME(20-30) P=PARTTIME(10-20) N=NONE

ACTIVITY: NUMBER OF EXTRACURRICULAR ACTIVITIES(1-5).

LIKE SCH: LIKE OF SCHOOL. +=LIKE 0=NOT SURE -=DISLIKE

currently writing its own software to essentially duplicate this report format given any specified class section number.

Of the thirteen pieces of information, finally selected by the work group, seven come from the extant district information system and six are based upon responses to the student survey. (Appendix D contains annotated copies of reports to show which survey items were used.) It is interesting to note that one of the most influential criterion for the selection of information had nothing to do with content. To be sure, the group struggled with different opinions regarding what to include; for example, survey items like #19, #21, #63, and #76 (see Appendix A) were considered along the way but were eventually eliminated for lack of sufficient consensus regarding their utility. Yet, the most restrictive criterion for selection was this: All teachers were agreed that all the information for classes as large as forty students should fit on a single 8 1/2 x 11 page, suitable to fit in their class notebooks, and not overly cluttered or densely packed with data.

At first blush, this may seem to be a rather trivial issue to get worked up about. Nevertheless, it was a critical one, and one that we will discuss further. Other issues emerging in the discussions around student-level data concerned the misuse and abuse of information, confidentiality, and creating self-fulfilling prophecies about students. These issues will also be discussed in the next section.

Finally, we note some of the constructive uses <u>anticipated</u> by the teachers for the student-at-a-glance report. For example, some of the teachers are currently experimenting with alternative forms of grouping practices to handle the wide range of individual ability differences in their classrooms. Using cooperative learning techniques, teachers need

to form heterogeneous ability groups. The information in the student report (particularly GPA and CTBS data) provide the teachers with an immediate basis for trial group assignments. As another example, the information inherent in the homework question and the questions regarding after school work and extracurricular activities may provide teachers with some basis for dealing with students having trouble or complying with homework assignments. Again, we will be interviewing and surveying all teachers next year regarding what use (if any) they made of these data.

Class-At-A-Glance

Teachers generally agreed that once the student-at-a-glance report was available, they could get a pretty good "feeling" for their class by "eyeballing" the arrays of data in each column. However, there were additional data from the student survey, which were not necessary to see student-by-student, but were still useful when aggregated at the class level. This information generally pertained to student perceptions of classroom teaching and learning and preferences for various subject matters and instructional practices.

Again, unanimity among the work group members was not reached regarding inclusion/exclusion of data for this report; nevertheless a working consensus was achieved on three basic sets of items: student preferences for different instructional grouping configurations, student preferences for various kinds of instructional activities, and the degree to which students say they like the particular subject matter of the class (e.g., mathematics).

Instead of the work group determining the report format for this report, the CSE staff used this opportunity to get teacher reactions to several different report formats ranging from straightforward tabular

presentation to "state-of-the-art" graphics using the SAS statistical system.

Exhibits 3 - 5 present the range of data displays offered to the work group for their consideration. Exhibit 3 shows the class-at-a-glance data numerically with no graphics whatsoever. Exhibits 4a - 4b show the same data using the SAS graphics package and special plotter. Three pages were required since these graphs could not be produced in reduced form on a single page. Since each teacher would get different results for each class, it made no sense to physically cut and paste and reduce these figures into a single page format. (Apparently, sophisticated graphics capabilities on a main frame computer are much less tractable than those on a microcomputer, e.g., MacIntosh. See 1984 Deliverable by Ender.) Finally, Exhibit 5 presents a compromise solution using cruder graphics (ordinarily available print characters), but in a compact, easy to read format.

Although they had no trouble interpreting the results, teachers immediately rejected the format in Exhibit 3. And, although they were moderately impressed with the pretty graphics in Exhibits 4a-4c, they were once again adamantly against receiving three sheets of paper containing information that could fit on one page. Moreover, they actually liked the simplicity of the cruder graphics in Exhibit 5--thus their decision was quick and easy to make.

During these discussions, issues again emerged such as the clinical-social orientations regarding the importance and use of information. Aggregating data at the class level also seemed to provoke another issue, namely, the reaction to data as if they were inherently directive. For example, does the information in the sample class report "tell" the teacher <u>not</u> to assign research projects to his/her class because it is

EXHIBIT 3

CLASS AT A GLANCE

Date

Section No: No. Enrolled Sutdents:

No. Students taking Survey:

	Like Very Much	Like Somewhat	Undecided	Dislike Somewhat	Dislike Very Much
93. Liking of mathmatics	0	50	46	2	2

INSTRUCTIONAL GROUPING REFERENCES

Listed below are four ways students can work in a classroom. Choose the letter on the answer sheet that tells how much you like or would like to work in each way, even if you don't do so now.

	Like	Undecided	Dislike
106. Alone by myself	57	6	33
107. With the whole class	49	17	34
108. With a small group of students, who know as much as I do	69	11	34
109. With a small group of students, some who know less, some who know as much, and some who know more than I do	63	9	29

STUDENT ACTIVITY PREFERENCES

Listed below are some things that you might do in a class. Choose the letter on the answer sheet that tells how much you like or would like to do each thing, even if you don't do it in class.

	Like	Undecided	Dislike
123. Listen to the teacher	57	20	23
124. Go on field trips	77	9	14
125. Do research and write reports, stories, or poems	26	9	66
126. Listen to student reports	33	20	43
127. Listen to speakers who come to class	74	6	20
128. Have class discussions	74	11	14
129. Build or draw things	46	29	26
130. Do problems or write answers to questions	40	26	34
131. Take tests or quizzes	31	17	51
132. Make films or recordings	40	23	33
133. Act things out	31	23	46
134. Read for fun or interest	54	26	20
135. Read for information	51	17	31
136. Interview people	33	29	34
137. Do projects or experiments that are already planned	51	20	29
138. Do projects or experiments that I plan	43	29	29

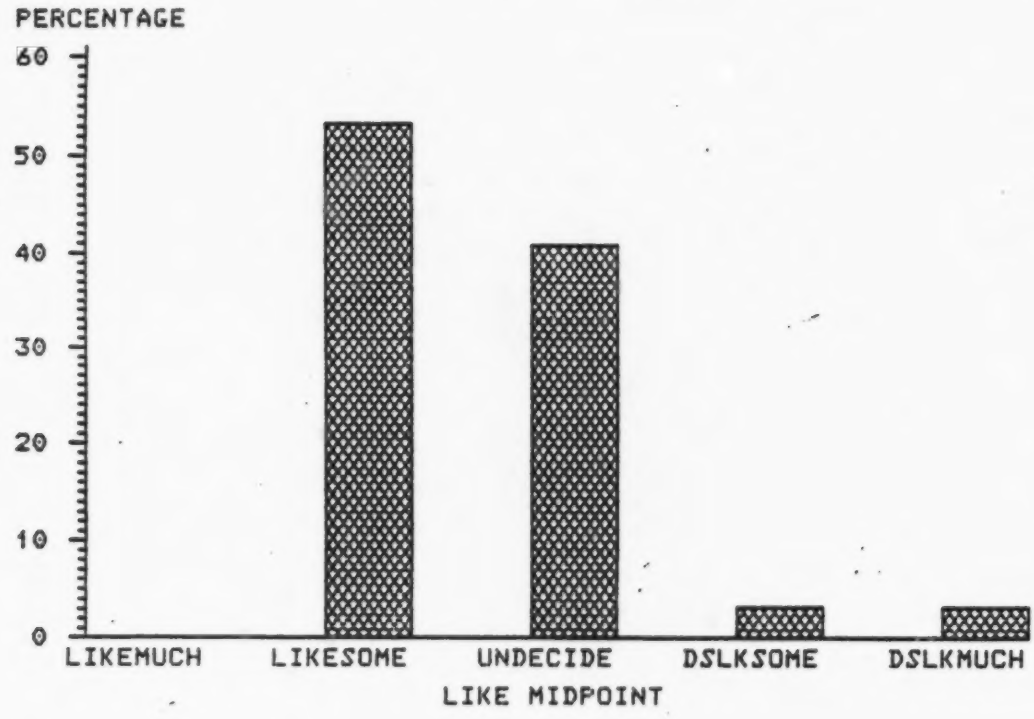

LIKING OF MATHEMATICS
PERCENTAGE
60
50
40
30
20
10
0
LIKEMUCH
LIKESOME
UNDECIDE
DSLKSOME
DSLKMUCH
LIKE MIDPOINT

EXHIBIT 4a

INSTRUCTIONAL GROUPING PREFERENCES

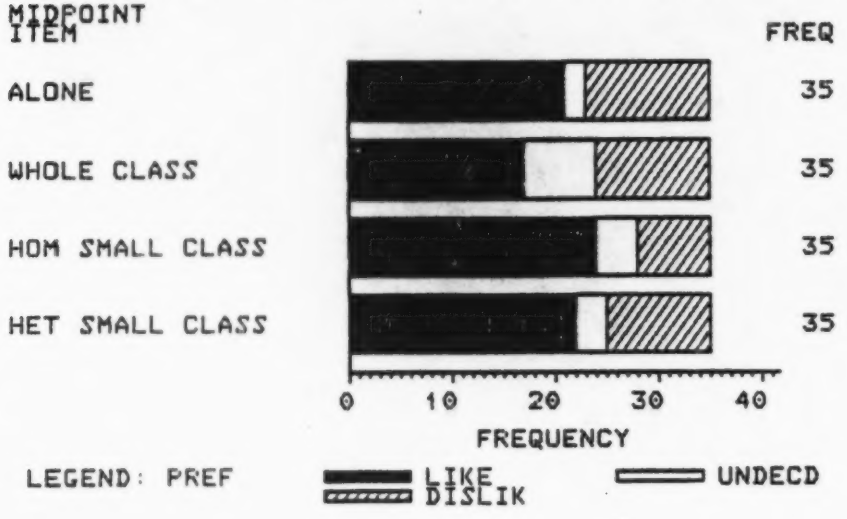


EXHIBIT 4b

STUDENT ACTIVITY PREFERENCES

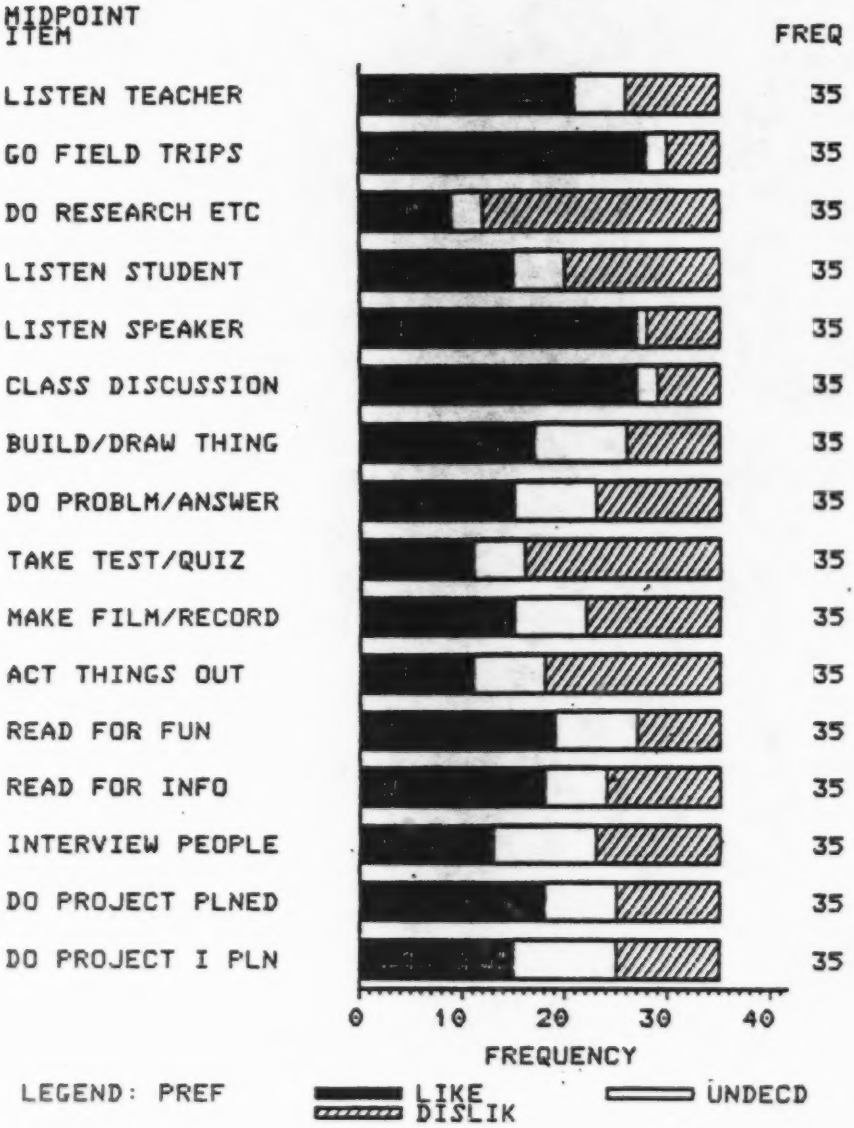


EXHIBIT 4c

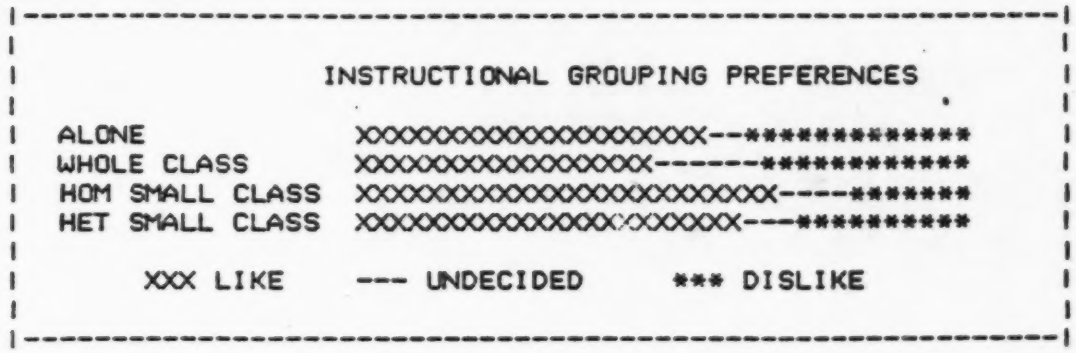
EXHIBIT 5

CLASS AT A GLANCE

FALL 84

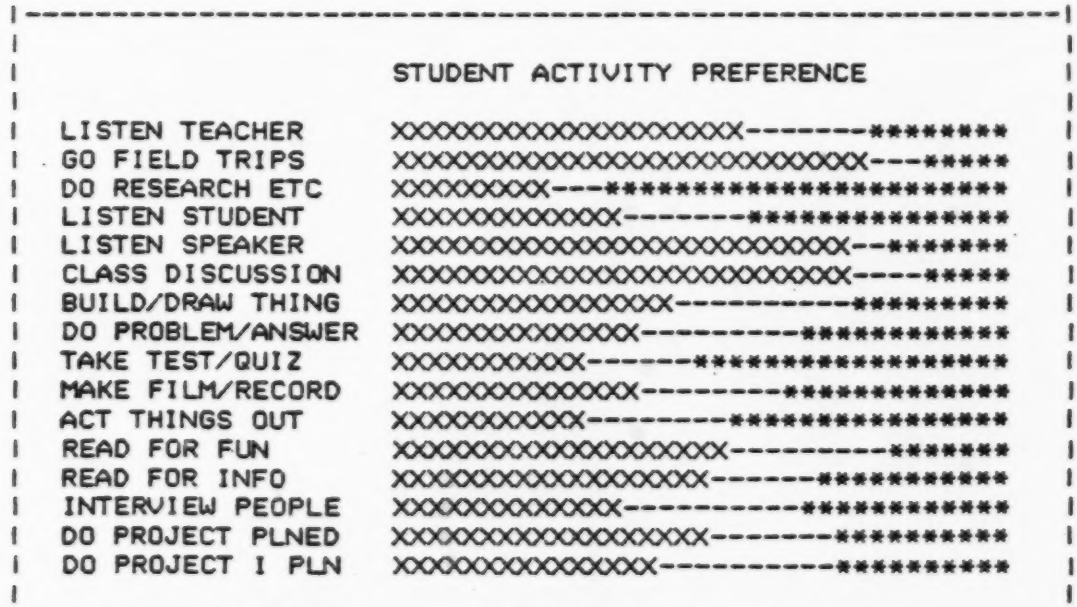
SECTION NO: XXXX
NO. ENROLLED STUDENTS: 35
NO. STUDENTS TAKING SURVEY: 35

INSTRUCTIONAL GROUPING PREFERENCES



LIKING OF MATHEMATICS

STUDENT ACTIVITY PREFERENCE



the least liked class activity; or does the information provide a context for teachers in dealing with student affect, dispositions, etc., when, in fact, research projects are assigned? We will return to this and other issues shortly.

School-At-A-Glance

Up to this point, information was treated in the context of specific students in specific classes, either as individual data points or as aggregated at the class level. In moving to the school level, a significant shift in orientation along the clinical to social data use continuum is required; all teachers must now become involved in the same set of data from the perspective of organizational needs, decision-making, planning, evaluation, and so forth.

Interestingly, it was not until this level of information use was considered that administrators became noticeably more involved and teachers become more passive in terms of inclusion-exclusion decisions. Perhaps this phenomenon was due, in part, to other reasons (e.g., the way CSE staff structured work group meetings) besides the obvious ones of traditional role and organizational structures, at least the ones that usually get played out in practice--teachers responsible for what goes on behind the classroom door; principals responsible for schooling issues that have visible impact at the building level.

In any case, the school-at-a-glance report that eventually emerged (see Exhibits 6a - d) was largely influenced by the principal's interest in what he saw as the several main issues, addressed by data in the student survey, that were of immediate concern to the high school. These issues were:

1. What are the curricular goal emphases at the high school; what should they be?

EXHIBIT 6a

Student Survey Results
May, 1984

School-At-A-Glance

FUNCTIONS OF SCHOOLING

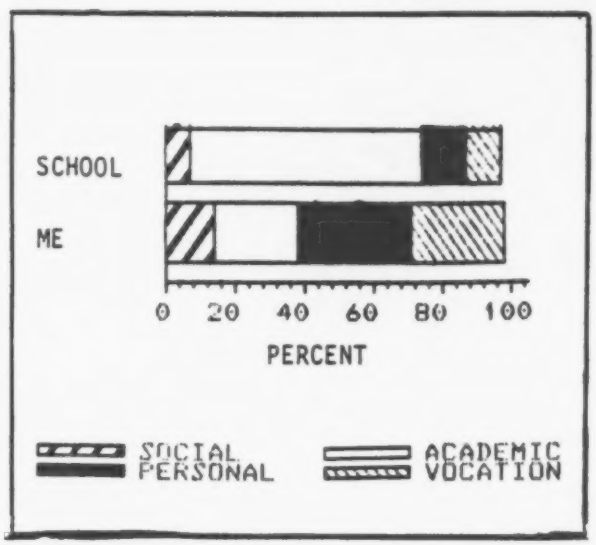
Social Development
Instruction that helps students learn to get along with others, prepares students for social and civic responsibility, develops students' awareness and appreciation of our own and other cultures.

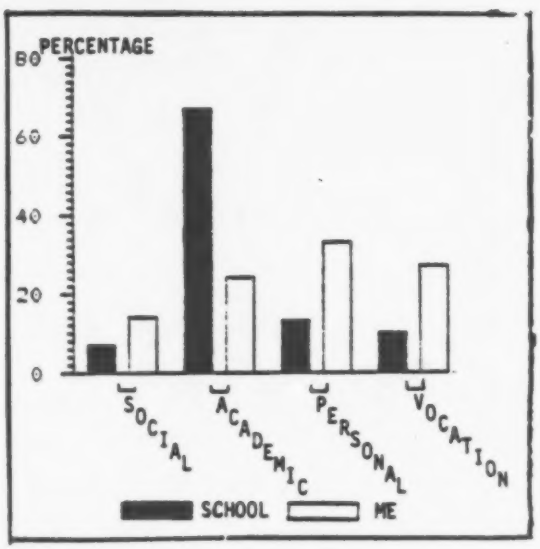
Intellectual (Academic) Development
Instruction in basic skills in mathematics, reading, and written and verbal communication and in critical thinking and problem solving abilities.

Personal Development
Instruction that builds self-confidence, self-discipline, creativity, and the ability to think independently.

Vocational Development
Instruction that prepares students for employment, developing the skills necessary for getting a job, developing an awareness about career choices and alternatives.

Some Student Perceptions:
(see survey questions 90 & 91; note wording -- students could only choose one)

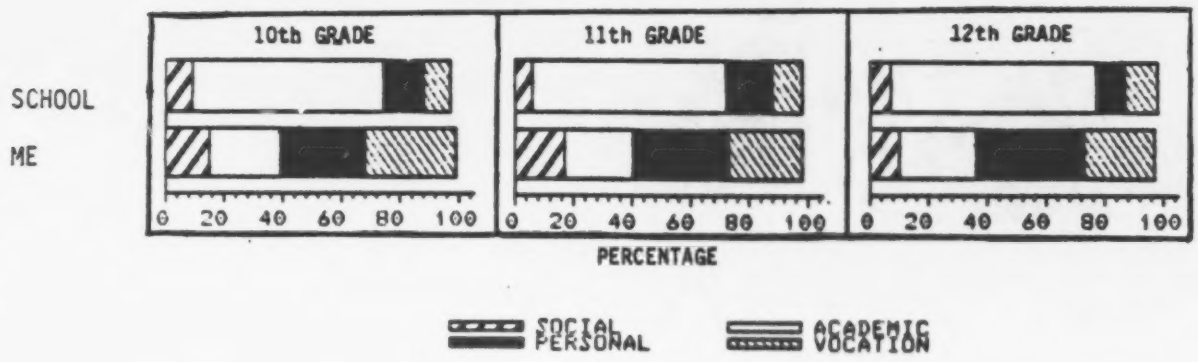




Students perceive the school as emphasizing mainly the academic function; from the students' point of view, however, they tend to spread the emphasis around to the other goal areas, particularly the personal and vocational functions.

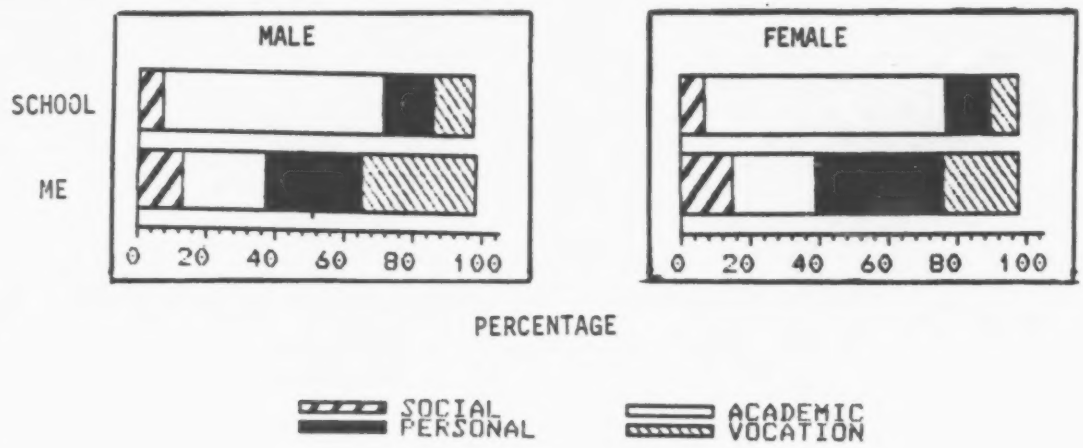
Congruency:
35% of the students place the most importance on the same goal area they see the school as emphaasizing. To put it the opposite way, nearly 2/3 of the students would prefer a different goal emphasis than the one they perceive.

DO THESE PERCEPTIONS CHANGE DEPENDING UPON GRADE LEVEL?



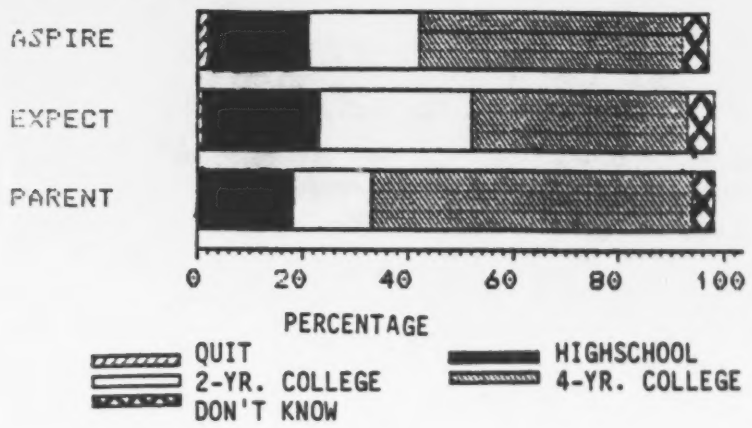
The trends, if any, are slight. Emphasis on Personal Development increases across grades (29% of 10th graders, 33% of 11th Graders and 38% of 12th graders) while emphasis on Social Development (16% in 10th grade, 17% in 11th grade, 11% in 12th grade) and Vocational Development (31% in 10th grade, 26% in 11th grade, 25% in 12th grade) decreases.

DO THESE PERCEPTION CHANGES DEPEND UPON SEX?

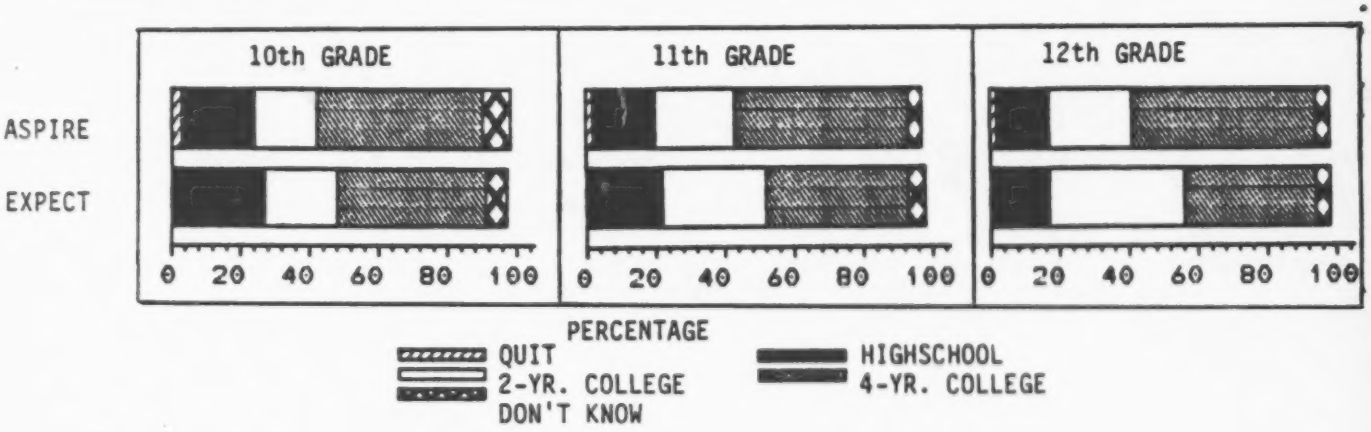


Boys place greater emphasis on vocational development than girls (33% of boys versus 22% of the girls) while girls place greater emphasis on Personal Development than boys (37% of girls versus 29% of boys).

STUDENT ASPIRATIONS AND EXPECTATIONS
(Survey questions 6, 7, and 8)



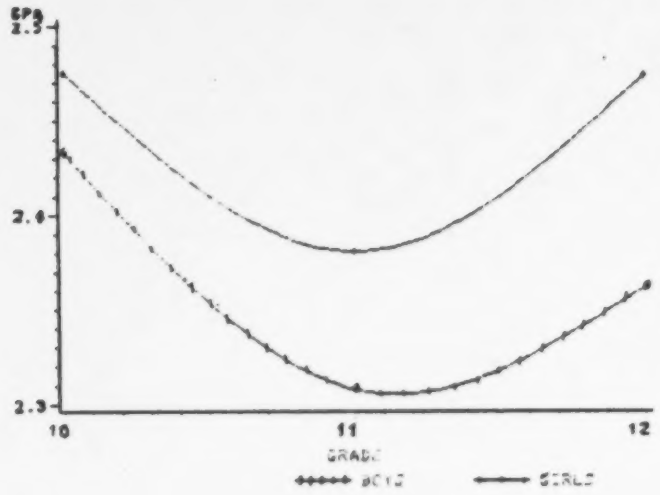
MAIN TREND: Half of the students would like to go to a 4 year college or university in contrast with only 22% aspiring to attend a 2-year college. Their expectations, however, drop by about ten percent; 40% expect to go to university and 30% expect to go to vocational school/junior college. Students perceive their parents' attitudes to be more in line with students' aspirations than with students expectations.



The general trend in aspirations is toward more education (both 2 year and 4 year college) across grades while the trend in expectations is toward less four-year college and more two-year college. While the percentage of students aspiring to attend a four-year college increases slightly across grades (from 48% at 10th grade to 53% at 12th grade), the percentage of students that expect to attend a four-year college decrease slightly (44% at 10th grade to 38% at 12th grade). The percentage of students expecting to attend a trade school or junior college increases substantially across grades (22% in 10th grade, 30% in 11th grade, and 39% in 12th grade).

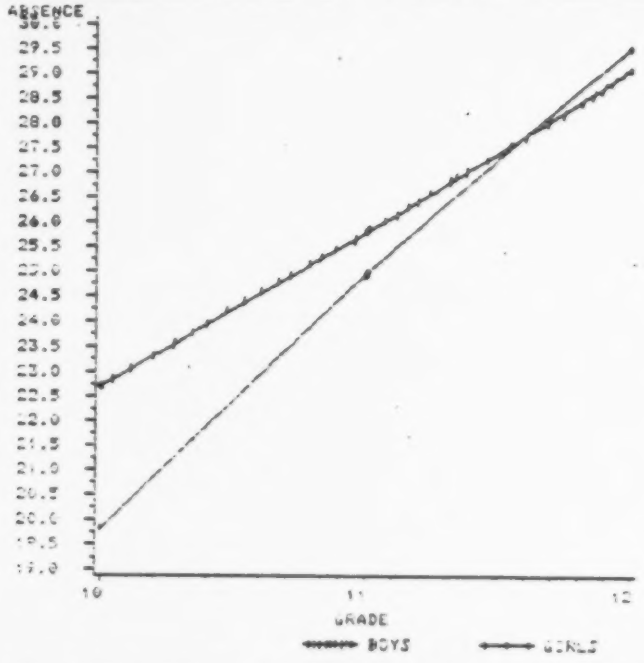
NOTE: According to district records, only 5-7% of all graduating seniors go on to a 4-year college.

GPA: Averages for Males and Females at Each Grade Level



Two slight tendencies are apparent: (1) Boys show lower GPA averages than girls, and (2) GPA goes down in the 11th grade.

DAYS ABSENT: Averages for Males and Females at Each Grade Level



Several trends are noteworthy: (1) Boys are generally absent more days than girls; (2) Absences increase almost linearly from the 10th through the 12th grades (roughly 3 to 4 more days absent in each grade level); (3) The increase in days absent over grade levels is more exaggerated for girls than boys (in fact, girls slightly surpass boys in the 12th grade).

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2. What do students and parents want; and how do these perceptions and expectations jibe with what students actually do upon graduation?

3. What are the implications of these issues for the Career Magnet Program and student comfort in selecting a career path in this program?

Basically, the data reported in Exhibit 6 begins to explore the information relevant to the first two issues by bringing to bear relevant student survey results along with several other variables from the district's information system. It should be emphasized that although it was certainly the intent of our project to capture data relevant to the school in these reports, we were also concerned with analysis and reporting issues such as:

- the optimal balance of descriptive text and graphics.
- the relative appeal of one graphical mode over another.
- easy to interpret graphical techniques for representing the relationships between two or more variables.
- the amount of information to be contained in any one report.

To be sure, many graphical techniques are available and none that we have used thus far are particularly novel. Nonetheless, knowing about things like bar charts, histograms, pie charts, frequency polygons, and so forth is one thing, using them in certain contexts for certain purposes to be understood and used in those contexts is quite another thing. It is quite clear in the literature how well known graphical techniques can be totally misused, misinterpreted, and/or irrelevant to the purposes intended (see, for example, discussions in Horwitz & Ferleger, 1980; Huff, 1954; and Tufte, 1983).

In a particularly enlightening and creative book on graphical methods, Tufte (1983, p. 51) outlines what he considers to be generic principles underlying quality visual presentation of quantitative data.

"Grapical excellence

. . . is the well-designed presentation of interesting data--a matter of substance, of statistics, and of design.

. . . consists of complex ideas communicated with clarity, precision, and efficiency.

. . . is that which gives to the viewer the greatest number of ideas in the shortest time with the least ink in the smallest space.

. . . is nearly always multivariate.

. . . requires telling the truth about the data."

In order to achieve these principals in practice, "graphical displays should

- show the data
- induce the viewer to think about the substance rather than about methodology, graphic design, the technology of graphic production, or something else
- avoid distorting what the data have to say
- present many numbers in a small space
- make large data sets coherent
- encourage the eye to compare different pieces of data
- reveal the data at several levels of detail, from a broad overview to the fine structure
- serve a reasonably clear purpose: description, exploration, tabulation, or decoration
- be closely intergrated with the statistical and verbal descriptions of a data set." (p. 15)

Although we have not been particularly creative with daring new visual displays, we have tried to incorporate many of these principles while at the same time being sensitive to the needs and concerns expressed by administrators and teachers in the work groups. Thus, the reports displayed in Exhibit 6a - d reflect deliberate attempts to:

1. Include just enough narrative to explain the major trends embedded in the graph(s) and include only the most relevant numerical results upon which the graph(s) was(were) based. (All teachers were given the raw data for reference purposes in the form of the student survey in Appendix A.)

2. Experiment with different graphical techniques that may represent the same data but highlight different emphases. The two graphs in Exhibit 6a, for example, are based on the same survey questions but call attention to different comparisons. The first graph highlights relative emphases on the schooling functions (social, intellectual, personal, vocational), while the second highlights the difference between perspectives (schools' emphasis vs. student's preference).

3. Organize visual displays thematically, with one theme per page, each successive page building upon previous ones, and all pages adding up to a reasonable (not overly data-laden) foray into the issues of concern to the group.

4. Go beyond a simple univariate treatment of information but not overly complicate the analytical and graphical treatments of data. The comparisons by grade level and sex (Exhibits 6b and c) and bivariate relationships in Exhibit 6d are illustrative.

5. Bring to bear a variety of information from a variety of sources (e.g., student survey, extant information system, and district records).

We must emphasize, again, that these reports are designed primarily as an "experiment" to test the feasibility of various data displays; as such, they only scratch the surface of what can be done analytically with the data in a comprehensive information system. In the coming year, we plan to more fully explore the analytical capabilities of the system, especially as the system will be augmented with another round of student survey data (for longitudinal comparisons) and possibly teacher and parent survey data as well.

EMERGING ISSUES

We have already alluded to (and in some cases, briefly described) some issues that seem to continually appear as teachers, administrators, and outside collaborators attempt to work together on designing, develop-

ing and using an information system responsive to needs at the building level. We will now briefly review and elaborate these issues.

Clinical Versus Social Uses of Information

Often in the deliberations over which piece of student survey data might be useful, particularly for class and school level reports, considerable differences of opinion seemed to occur between members of the work group. Often, the generic form of the debate seemed to take the forms of "I don't see how I could use this piece of information in teaching a student" versus "I think these data could help us (me) make planning decisions about the school (my class)." In effect, the disagreement was more a matter of differing orientations than it was of informational content.

CSE staff intervened a number of times in these discussions attempting to clarify the individual, diagnostic, clinical orientation, on the one hand, and the organizational, planning, social perspective, on the other. These interventions seemed to help clarify and facilitate the discussion and also permitted the observation that some teachers simply placed less value on the social use of information. Nevertheless, teachers could more easily sort out the substantive aspects of inclusion-exclusion decisions; they could, for example, agree that an item like "How much do you like mathematics?" had less diagnostic use at the individual level, yet could be aggregated at the classroom level to provide information helping the teacher deal with climate and learning environment issues.

The clinical-social distinction is not a new one in work relating to assessing organizations, but its manifestation in the school setting as people attempt to design and make sense out of comprehensive

information systems deserves further study. Clearly, the issue has a direct bearing upon statistical and psychometric concerns arising out of multilevel analysis. Also clear, are the interacting effects of the socio-cultural context and circumstances of schooling and teaching that may predispose teachers to "think clinically"--we are referring here to features such as the hierarchical organization of schooling, traditional roles of administrators vis a vis teachers, and the ways teachers have for developing and organizing their "working knowledge."

The clinical-social issue both cuts across the issues that follow and discussing it in more depth is beyond the scope of this report. As more data are accumulated in the 1985 project year, we expect more insights regarding this phenomenon. It will thus serve as the major focus for a 1985 project deliverable.

Teachers As Researchers/Data Analysts

Over the course of our meetings with the work group, teachers and administrators behaved more and more like trained researchers, asking more questions of the data and requiring more sophisticated treatments of the data (e.g., bivariate and multivariate analyses). Certainly part of this may be due to our presence and our deliberate suggestions regarding the ways in which data can be explored (see again Appendix B). However, these enlightened approaches to data exploration were clearly evident in the work group from the beginning and were evidenced by several teachers never even involved in the work group.

Our point here is to cast some doubt on the often heard lament that teachers don't really care about having more and better information and, even if they did, wouldn't know what to do with it. The fact of the matter may be less an issue of caring and more one of professional

opportunity. The current circumstances of teaching and administrating simply do not permit the kind of time necessary for informed dialog, decision-making, action-taking, and evaluation that characterizes a dynamic and renewing organization (Goodlad, 1975).

As the age of information explodes upon us, along with the technology to handle it, the pressures for organizational change become impossible to ignore. Many organizations in the private sector have been both receptive and responsive to, for example, the increased role of workers as informed decision-makers (Peters and Waterman, 1982). Our belief is that schools (and their districts) will need to change in similar and perhaps even more profound ways to allow administrators and teachers to participate more fully as professionals and engage in inquiry processes that can be significantly advanced by the kind information systems we have been discussing. (See 1982 Deliverable by Sirotnik and Oakes for a more in-depth discussion of the inquiry and school renewal model being suggested here.)

The Power of Numbers

When teachers are ordinarily presented with quantitative data, it is usually of the prescriptive variety and often for the purpose of accountability--standardized test scores are the prime example. Even in ordinary, everyday life we are bombarded with numbers that seem to suggest responding rather than reflecting--Dow Jones averages, inflation rates, weather reports, etc. It is not surprising to see school staff, therefore, reacting to survey data as if they contain the prescription for educational change instead of providing just one more heuristic for helping to understand the possible directions for change.

The typical way in which we observed this phenomenon is illustrated in the following exchange (paraphrased here) by members of our work group:

> Person A: If we allow these data to make decisions for us, then we must be concerned with the validity of the student responses.
>
> Person B: I give tests--I have a vested interest, as a teacher, in student assessment. Would I reconsider this method of evaluation just because kids say they don't like tests? Maybe so.
>
> Person A: I think learning to read is more important than any subject matter per se. So I assign reading both for content and skill development. If the survey indicated students don't like textbooks, should I not bother to teach them to read?
>
> Person C: It seems that the dilemma here is more a question of perceptions regarding what the data mean.

Person C, of course, hit the nail on the head. We added our own "two cents" to this discussion by noting that data do not make decisions--people do. Thus, information is best used not as a blueprint for action but as a catalyst for, and adjunct to, staff discussion and decision-making.

These kinds of discussions occurred a number of times throughout the course of the project, and it seemed to be of some considerable relief to the work group to know that it's OK to be proactive rather than reactive in regard to information and the use of information.

The Quest for Simplicity in Complexity

Although issues of content were always of importance to the work group as they deliberated over what and what not to include in the several reports, of equal (or perhaps even more) importance was the group's wish for simple, short, uncluttered, non-numeric displays of data. The prime example was the bottom line for student- and class-at-

a-glance reports--whatever they contained, they needed to fit on single 8 1/2 x 11 pages.

Not withstanding the validity of the group's concerns, schooling and the assessment of it is extraordinarily complex; there are multiple data sources, multiple domains of potential data, multiple levels at which information is used, multiple methods for obtaining data, and multiple analytic and reporting techniques. Yet given this complexity, we still seek simple representations of it.

We do not mean to suggest that this is an unworthy goal or that a complex problem necessitates a complex solution. In fact, as a society, we will probably face a growing need to provide a more "human edge" to the products of an increasingly technological world. (See Naisbitt's, 1982, analysis of the "high tech/high touch" megatrend as we move from an industrial to an information society.) Our point here is simply to note the tension between the legitimate requirement for simplicity in representing the information pertaining to a complex process (schooling) and setting (schools).

The Misuse of Information

The potential for misusing information--violating confidentiality, creating self-fulfilling prophecies regarding individuals (e.g., students, based on CTBS "ability" scores), misinterpretations, overinterpretations, and inappropriate applications of data, and so forth--has always been a feature of districts and schools. The presence of a comprehensive and accessible information system merely exacerbates the problem.

Nonetheless, it is still a serious problem and we have been sensitive to it in the general context of developing and using computerized information systems (Sirotnik, 1984). The teachers in the work group

(as well as several others in the faculty at large) have also been worried about the abuse of people through the misuse of data, and they have voiced their concern several times over the course of this project. Interestingly, this concern is provoked by the presence of information like self-concept, homework compliance, and educational expectations. Yet data such as the ever-present standardized test scores have always had as much (or more) potential (and actual) misuse--for example, the stigmatizing and disenfranchising from academic excellence of many students in low tracked classes (Oakes, in press).

But we find no comfort in the old notion that it is people, not the information per se, that carry the potential for abuse. It may well be that the costs due to the misuse of information may well outweigh the advantages of individually based reports like students-at-a-glance. But then need all such reports be automatically generated for all teachers? Perhaps only those teachers requiring certain kinds of data for reasonable purposes could request and receive immediately reports tailored for their needs. We plan to study the feasibility of this alternative (including technological implications) in the coming year.

Needless to say, this whole issue is bound to become messier before it becomes clearer. We can only remain sensitive to the misuse of data within the context of the constructive use of information systems.

The Educative Function in Collaboration

We have, we believe, been appropriately self-conscious regarding our role in this project. Our presence in the work group has not been exactly unobtrusive, nor has it been unduly interventionist. We have tried to walk that fine line separating the role of observer-researcher from active participant-director.

Throughout the discussion in this report, we have tried to make clear how we may have shaped the course of events in what we hope was an educative, more than a directive, role. This observation is not meant in any way to be a condescending statement by university-based educators bringing their words of wisdom down to the less informed levels of school practitioners. The fact of the matter is that the educative function in collaborative research is quite reciprocal--we have been educated often during this project by teachers and administrators concerning the realities of schooling and the meaning and use of information in the context of practice.

What all this suggests to us is the need for someone or group to serve in an educative and collaborative role regarding issues (like those emerging here) pertaining to the development and use of information systems. Given the trends toward increased use of technology, moves toward decentralization, and needs for reconfiguration of resources, it is not hard to imagine an FTE position at the building level explicitly for R&D-type activities based upon a comprehensive information system.

FUTURE DIRECTIONS

As stated in the proposal for FY 1985, this final project year will be devoted to achieving closure on the basic problems raised and studied in this project. The deliverables this year represent, essentially, beginning versions of the final reports. All these problems--organizational and process issues in developing and using information systems, expanding the concept of information to include more than just achievement test data, developing a feasible hardware-software interface that meets the information needs at the building level, and analyzing and displaying

information in clear and useful ways--are interconnected and will be enlightened by the activities planned for FY 1985 (see proposal).

Of particular relevance to this report will be the data gained by studying how administrators and staff respond to the several reports that will be produced and distributed by the district. Other data collection, analysis, and reporting activities are also being planned for follow-up student surveying and teacher and parent surveys. As these activities proceed, not only will data be obtained regarding the actual use, misuse, and/or nonuse of information systems by school staff, but also, additional insight into the clinical-social distinction raised above is anticipated. This issue, which we believe is embedded in many of the other emerging issues noted, will form the basis of a final report for FY 1985 as well.

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APPENDIX A

Student Survey and
Results of Survey Conducted
in May 1984 (N = 1461)

High School Student Survey

The survey you are about to complete will ask you questions about yourself and about your school. This is not a test. There are no right or wrong answers. The survey will give you an opportunity to express how you feel about what happens in your classes and around school. That is why it is important to answer the questions as truthfully and as carefully as possible.

DO NOT WRITE ON THESE PAGES

MARK YOUR ANSWERS ON THE ANSWER SHEET PROVIDED. You will notice that answers go from A to E or from F to K. This does not matter. Simply choose the one answer that best fits your opinion for each question. MARK ONLY ONE LETTER ON THE ANSWER SHEET FOR EACH QUESTION. For example, if you chose answer B for question number 5, you would mark the answer sheet like this:

Or, if you chose answer J for question number 6, you would mark the answer sheet like this:

Remember, mark only one letter on the answer sheet for each question. If there are any words or questions you don't understand, please raise your hand and ask for help.

DO NOT BEGIN UNTIL YOU RECEIVE MORE INSTRUCTIONS

This question will be answered differently than the others. You will use the blue box at the top of the answer sheet. Read the list of Career Magnet Schools below.

1. Physical Science and Technology
2. International Relations & Political Science
3. Business
4. Industry
5. Performing, Visual and Fine Arts
6. Mental, Physical & Biological Sciences
7. Liberal Arts
8. Entry and Essentials
9. Don't Know

Now, using the last column of the blue box (to the far right), mark the number on the answer sheet that matches your career magnet school.

Starting with number 1 on the survey, the rest of the questions will be answered in the white area of the answer sheet. Remember, do not mark on the survey sheets themselves. Mark one answer for each question on the answer sheet.

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High Student Survey Results
May 1984

Questions About Yourself

1. Sex:
49 A. Male
51 B. Female

2. Besides English, what other languages are spoken in your home:
77 F. None
10 G. Spanish
1 H. Vietnamese
1 J. Chinese
10 K. Other

3. Living situation:
78 A. With two parents (includes stepparents)
15 B. With one parent only (mother or father only)
3 C. Guardian(s)/foster parents
1 D. Alone or with friends
3 E. Other

4. About how many hours a week do you usually spend working on a job during the school year?
50 F. None. I am not employed during the school year.
14 G. About 10 hours or less
18 H. About 15 - 20 hours
13 J. About 20 - 30 hours
6

5. How many hours do you watch television each day?
14 A. None
38 B. About 1 hour
36 C. About 2 - 3 hours
8 D. About 4 - 5 hours
4 E. More than 5 hours

Choose the ONE answer that best completes each of the following sentences.

6. If I could do anything I want, I would like to:

3 F. Quit school as soon as possible.
19 G. Finish high school.
22 H. Go to trade/technical school or junior college.
50 J. Go to a 4-year college or university.
6 K. Don't know.

7. I think my parents would like me to:

1 A. Quit school as soon as possible.
19 B. Finish high school.
15 C. Go to trade/technical school or junior college.
62 D. Go to a 4-year college or university.
4 E. Don't know.

DO NOT WRITE ON THIS PAGE

8. Actually, I will probably:

1 F. Quit school as soon as possible.
23 G. Finish high school.
30 H. Go to trade/technical school or junior college.
40 J. Go to a 4-year college or university.
6 K. Don't know.

9. How comfortable do you feel about choosing a future career goal at this point in your life?
10 A. Very Uncomfortable
13 B. Uncomfortable
34 C. Neither Uncomfortable or Comfortable
31 D. Comfortable
12 E. Very Comfortable

The following sentences describe some of the ways in which people might think about themselves.

Read each of the following sentences carefully and mark the letter on the answer sheet that tells how much it is like you.

Look at the following practice sentence and mark the letter on the answer sheet that tells how much you agree or disagree with the sentence.

PRACTICE	Strongly Agree	Mildly Agree	Not Sure	Mildly Disagree	Strongly Disagree
I am good at art	A.	B.	C.	D.	E.

If you Choose "Strongly Agree," you're saying that you are very good at art. If you choose "Mildly Agree," you're saying that you are OK at art. If you choose "Mildly Disagree," you're saying that you are not too good at art. If you choose "Strongly Disagree," you're saying that you are very poor at art.

	Strongly Agree	Mildly Agree	Not Sure	Mildly Disagree	Strongly Disagree
10. I'm popular with kids my own age.	21	52	20	5	1
11. Kids usually follow my ideas.	12	47	29	9	3
12. Most people are better liked than I am.	6	13	32	29	19
13. It is hard for me to make friends.	4	11	5	27	52
14. I have no real friends.	3	4	4	10	79
15. I'm not doing as well as I'd like to in school.	36	32	5	14	12
16. I am a good reader.	39	37	11	8	5
17. I'm proud of my schoolwork.	16	37	17	19	11
18. I'm good at math.	22	33	14	17	14
19. I'm doing the best work that I can.	14	28	13	28	16
20. I am able to do schoolwork at least as well as other students.	46	32	14	6	2

DO NOT WRITE ON THIS PAGE

	Strongly Agree	Mildly Agree	Not Sure	Mildly Disagree	Strongly Disagree
21. My grades are not good enough.	27	32	8	18	15
22. I'm always making mistakes in my schoolwork.	5	16	16	40	23
23. I am a good writer.	21	38	21	14	7

Questions About Your School Life

How much do the following words describe most of the teachers at this school?

	Very Much	Pretty Much	Some-what	Only A Little Bit	Not at All
24. Friendly	11	51	27	8	3
25. Helpful	12	48	28	9	3
26. Have high hopes for us	12	28	36	18	7
27. Talk to us	18	39	27	12	3
28. Let us talk to them	17	37	29	13	4
29. Care about us	9	31	36	16	7
30. Do a good job	12	49	26	8	4

How much do the following words describe how you feel about most of the students at this school?

	Very Much	Pretty Much	Some-what	Only A Little Bit	Not at All
31. Friendly	13	51	28	7	2
32. Helpful	7	32	40	17	4
33. Have high hopes	8	28	43	16	4
34. Smart	7	41	41	9	2
35. Talk to each other	48	36	12	3	1
36. Care about each other	17	41	29	10	3
37. Competitive	41	32	20	5	2

DO NOT WRITE ON THIS PAGE

38. The most popular students in this school are: (Choose only one answer)

48 F. Athletes

3 G. Smart students

9 H. Members of student government

35 J. Good-looking students

3 K. Wealthy students

Indicate whether or not you participate in the following activities at school. (Answer yes or no for each of the following).

	Yes	No
39. I participate in sports teams/drill team/flags/cheerleading.	37	60
40. I participate in student government.	8	88
41. I participate in music, band, drama, or other arts.	17	79
42. I participate in honor society.	19	77
43. I participate in school clubs/community service activities.	26	71

Below is a list of things which may be problems at this school. How much do you think each is a problem at this school?

	Not a Problem	Minor Problem	Major Problem
44. Student misbehavior (fighting, stealing, gangs, truancy, etc.)	17	62	19
45. Poor courses or not enough different subjects offered	40	40	17
46. Prejudice/Racial conflict	66	26	7
47. Drugs	16	49	34
48. Alcohol	18	45	36
49. Poor teachers or teaching	33	48	17
50. School too large/classes overcrowded	59	31	9
51. Teachers don't discipline students.	57	34	8
52. Poor or not enough buildings, equipment, or materials	41	38	19
53. The principal and other people in the office who run the school	32	34	32
54. Poor student attitudes (poor school spirit, don't want to learn)	23	49	26
55. Too many rules and regulations	21	35	43
56. How the school is organized (class schedules, not enough time for lunch, passing periods, etc.)	12	28	58

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Issues and Problems:

Read each one of the following sentences carefully and choose the letter that tells how much you agree or disagree with what it says. CHOOSE ONLY ONE LETTER for each sentence. Please raise your hand if you have any questions.

	Strongly Agree	Mildly Agree	Not Sure	Mildly Disagree	Strongly Disagree
57. What I'm learning in school is useful for what I will need to know NOW.	21	40	16	16	7
58. What I'm learning in school will be useful for what I will need to know LATER in life.	34	33	15	10	8
59. I think students of different races or colors should go to school together.	67	11	7	3	10
60. Girls get a better education than boys at this school.	5	6	23	11	55
61. There are places at this school where I don't go because I'm afraid of other students.	6	8	6	10	68
62. Boys get a better education than girls at this school.	3	3	23	12	59
63. I do not have enough time to do my school work.	15	28	13	26	18
64. High school students should have job experience as part of their school program.	32	27	23	11	7
65. Many students at this school don't care about learning.	22	34	24	15	4
66. Average students don't get enough attention at this school.	17	29	29	17	6
67. Some of the things teachers want me to learn are just too hard.	12	21	17	29	20
68. Too many students are allowed to graduate from this school without learning very much.	19	22	23	17	16
69. If I had my choice, I would go to a different school.	11	8	21	18	42
70. There are things I want to learn about that this school doesn't teach.	29	24	18	15	13
71. It's not safe to walk to and from school alone.	5	8	11	15	60

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	Strongly Agree	Mildly Agree	Not Sure	Mildly Disagree	Strongly Disagree
72. I have trouble reading the books and other materials in my classes.	7	12	8	23	52
73. The grades or marks I get help me to learn better.	17	29	25	17	11
74. I like school.	19	41	14	12	12
75. The grades or marks I get in class have nothing to do with what I really know.	21	25	19	21	14
76. I have to learn things without knowing why.	18	27	21	19	13
77. Parents should have a say in what is taught at this school.	17	27	23	16	16
78. It is easy for me to get help from a counselor when planning my school program.	39	28	10	11	9
79. We are not given enough freedom in choosing our classes.	27	21	11	23	18
80. We are not given enough freedom in choosing our teachers.	49	19	8	12	10
81. If I have a personal problem, it would be easy for me to get help from a counselor.	19	17	26	14	23
82. If you don't want to go to college, this school doesn't think you're very important.	8	16	31	21	22
83. Students should have a say in what is taught at this school.	37	32	14	9	6
84. A person is foolish to keep going to school if he/she can get a job.	4	4	9	16	65
85. If I need help planning for a career, it would be easy for me to get help from a counselor.	35	26	18	11	8
86. I like the way this school looks.	14	42	18	16	9
87. It is easy to get books from the school library.	40	36	11	6	4
88. Things in the school library are useful to me.	32	41	15	7	4
89. Materials in the Career Guidance Center (CGC) are useful to me.	29	27	29	8	5

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Questions About Teaching, Learning & Classroom Work

All schools teach pretty much the same things, but they may think some things are more important than others. . .

90. Which ONE of these does this school think is the most important thing for students? (Choose only one)

7 F. To work well with other people
65 G. To learn the basic skills in reading, writing, arithmetic, and other subjects
13 H. To become a better person
10 J. To get a good job

91. If you had to choose only the ONE most important thing for you, which would it be? (Choose only one)

14 A. To work well with other people
24 B. To learn the basic skills in reading, writing, arithmetic, and other subjects
32 C. To become a better person
26 D. To get a good job

In general, how do you like the following subjects?

	Like Very Much	Like Somewhat	Undecided	Dislike Somewhat	Dislike Very Much
92. English	23	45	10	14	6
93. Mathematics	25	34	10	14	16
94. Social studies (history, geography, government, etc.)	20	31	13	16	16
95. Science	23	30	16	14	14
96. Computer Education	28	27	33	6	5
97. The Arts (art, crafts, music, drama, dance, creative writing, film-making, photography)	40	26	20	8	5
98. Foreign Language	13	26	24	16	21
99. Vocational/Career Education (shop, business education, home economics, etc.)	24	30	29	8	5
100. Physical Education	43	28	11	8	8

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101. How many hours of homework do you have each day?

14 A. None
40 B. About 1 hour
35 C. About 2 - 3 hours
5 D. About 4 - 5 hours
3 E. More than 5 hours

102. In general, how often do you do your homework?

21 F. All of the time
41 G. Most of the time
21 H. Sometimes
11 J. Seldom
3 K. Never

103. How soon do teachers usually return your work?

12 A. the next day
29 B. 2 days later
24 C. 3 days later
10 D. 4 days later
22 E. 5 days later or more

104. When you make mistakes in your work, how often do teachers tell you how to do it correctly?

10 F. All of the time
35 G. Most of the time
28 H. Only sometimes
18 J. Seldom
6 K. Never

105. How often do your parents or other family members help you with your school work?

7 A. All of the time
16 B. Most of the time
25 C. Only sometimes
28 D. Seldom
21 E. Never

Listed below are four ways students can work in a classroom. Choose the letter on the answer sheet that tells how much you like or would like to work in each way, even if you don't do so now.

	Like Very Much	Like Somewhat	Undecided	Dislike Somewhat	Dislike Very Much
106. Alone by myself	20	35	11	20	12
107. With the whole class	21	41	14	15	7
108. With a small group of students, who know as much as I do	39	35	12	6	5
109. With a small group of students, some who know less, some who know as much, and some who know more than I do	31	31	17	11	8

DO NOT WRITE ON THIS PAGE

Listed below are some things that might be used in a class. Choose the letter on the answer sheet that tells how much you like or would like to use each thing, even if you don't use it in a classroom.

	Like Very Much	Like Somewhat	Undecided	Dislike Somewhat	Dislike Very Much
110. Textbooks	11	38	14	22	12
111. Other books	10	39	26	15	6
112. Work sheets	14	40	15	17	10
113. Films, filmstrips, or slides	43	35	9	6	3
114. Games or simulations	39	29	16	7	4
115. Newspapers or magazines	18	37	23	12	5
116. Tape recordings or records	21	28	22	16	8
117. Television/video	54	31	6	3	1
118. Calculators	38	34	15	5	3
119. Globes, maps, and charts	20	34	20	13	9
120. Animals and plants	35	33	17	6	4
121. Lab equipment and materials	37	30	14	9	5
122. Computers	48	25	14	3	5

Listed below are some things that you might do in a class. Choose the letter on the answer sheet that tells how much you like or would like to do each thing, even if you don't do it in class.

	Like Very Much	Like Somewhat	Undecided	Dislike Somewhat	Dislike Very Much
123. Listen to the teacher	17	46	13	13	6
124. Go on field trips	60	23	8	3	2
125. Do research and write reports, stories, or poems	10	24	13	22	24
126. Listen to student reports	10	26	20	22	17
127. Listen to speakers who come to class	30	40	11	9	5
128. Have class discussions	40	32	11	7	5
129. Build or draw things	29	28	18	12	8
130. Do problems or write answers to questions	11	31	20	20	13

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	Like Very Much	Like Somewhat	Undecided	Dislike Somewhat	Dislike Very Much
131. Take tests or quizzes	5	25	15	27	23
132. Make films or recordings	24	23	29	11	8
133. Act things out	19	22	22	16	16
134. Read for fun or interest	38	31	13	8	5
135. Read for information	17	36	17	17	8
136. Interview people	17	24	24	17	12
137. Do projects or experiments that are already planned	20	37	17	13	7
138. Do projects or experiments that I plan	24	30	21	12	8

Please indicate how important each of the following items was in your choice of classes here at Royal High School.

	Very Important	Important	Not Sure	Not Important	Very Unimportant
139. Taking classes from teachers I like	58	23	6	6	2
140. Being in the same classes as my friends	32	33	11	15	3
141. Completing graduation requirements	74	12	3	3	2
142. Learning skills for a future job	60	24	6	2	2
143. Taking classes that will help me be a better person	46	31	10	4	2
144. Being challenged by taking hard subjects	22	33	19	13	6
145. Taking classes that will prepare me for the future	55	26	8	2	2
146. Getting a wide variety of classes	34	32	17	7	2
147. Preparing for college	48	24	13	5	3
148. Taking classes requiring little work	10	18	29	31	15
149. Avoiding subjects I don't like	22	24	22	17	7
150. Taking classes that are popular	9	17	28	27	12
151. Taking classes my parent(s) consider important	9	28	22	21	13
152. Taking classes where I can get good grades	22	30	18	17	5

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Questions About the Learning Resource Center (LRC)

153. Have you heard of the Learning Resource Center?

79 A. yes
8 B. no

154. If yes, how often have you gone with your classes to the Learning Resource Center?

22 F. Never
52 G. Only once or twice
10 H. About once or twice a month
3 J. About once or twice a week
2 K. Almost every day

155. How often have you gone to the Learning Resource Center by yourself?

50 A. Never
26 B. Only once or twice
8 C. About once or twice a month
3 D. About once or twice a week
3 E. Almost every day

If you have ever used the Learning Resource Center, have you used any of these services? (Answer yes or no for each of the following).

	Yes	No
156. Diagnostic testing for reading and math problems	8	72
157. Entry testing for proper class placement	8	72
158. Assistance with assignments from classroom teacher	16	64
159. Work on tasks assigned by the Learning Resource Center	10	70
160. After school seminars	8	71
161. Study hall	17	64
162. SAT preparation	10	70
163. Proficiency test preparation	11	70
164. Use the computer	18	62
165. Study skills	19	61
166. Language laboratory	11	69
167. Assistance in researching or typing papers	12	68
168. Use the typewriter	8	72
169. Receive individual tutoring	6	73
170. Develop library/research skills	9	71
171. Develop reading skills	9	70
172. Develop writing skills	10	69
173. Develop math skills	6	73
174. Develop listening skills	12	68
175. Develop test taking skills	14	65

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176. Have you received credit for Writing I through the Learning Resource Center?
4 F. yes
76 G. no

177. Have you received credit for Developmental Reading through the Learning Resource Center?
4 A. yes
76 B. no

	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
178. The Learning Resource Center is helping students at Royal.	16	32	32	4	3
179. Most students know about the resources available in the Learning Resource Center.	9	23	23	21	9
180. I have been helped by the services of the Learning Resource Center.	9	18	20	18	20
181. I am comfortable about using the services of the Learning Resource Center.	11	18	35	11	11
182. My work in the Learning Resource Center has helped me in my courses.	7	12	32	16	18
183. My work in the Learning Resource Center has made me feel more secure about my ability to do the work assigned by my teachers.	6	11	32	16	19

Questions About the Career Magnet School

	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
184. I understand what the Career Magnet School program is trying to do.	20	26	18	11	13
185. I would like more information about the Career Magnet Schools.	28	24	20	6	9

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A P P E N D I X B

Outline of Two-Day
Work Group Retreat On
Using and Reporting Information

Some Guidelines for June 18-19
High School/UCLA Workshop

Thinking About the Use of Information for Different Purposes

- Different contexts (or levels):

  Individual, e.g., student test scores, survey responses, etc. used diagnostically on a per student basis.

  Class, e.g., student test scores, survey responses, etc. aggregated (e.g., averaged, tabled, etc.) for all students in a particular class and used for teacher-class planning.

  Department, e.g., student data aggregated for a particular department (e.g., math) and used for teacher/administrator planning.

  School, e.g., data aggregated for entire school (perhaps organized by grade, sex or other relevant attribute depending on purpose) and used for administrative and teacher planning.

- Let's take a couple of examples:

  Function of schooling questions
  (#90 and #91)

  Educational aspiration questions
  (#6 - 8)

  Instructional grouping questions
  (#106 - 109)

- Some different ways of looking at survey questions:

  ---One-by-one
  ---Contrasting one with another
  ---Crosstabulating (detailing the relationship of) one with another

- Small group brainstorming:

  Think up several examples using survey data (or envisioned analyses of these data) of how information could be used for:

  ---Individual level instruction
  ---Classroom level planning
  ---School level planning

- Total group brainstorming:

  In particular, in what ways can we increase the potential relevency of single items of information by interrelating them with other important information? Specific examples are needed.

- Reporting formats:

  How would you like to see the results reported back?
  ---Small work groups take a shot at several examples.

  Are there any general "rules" that emerge?
  ---Total group discussion

A P P E N D I X C

Description of District Information System File Structure and Contents

The district's information system (implemented on a Burroughs Model 6800 mainframe computer with remote terminal access at district and school levels) is made up of a number of files that can be linked together by identification pointers (using COBOL) for purposes of updating, sorting, merging and selecting information in analysis and reporting operations.

Of essential importance to this project are these five student files compiled and maintained by the district:

CTBS Test Score File: cumulative record of all student test score results for all quantitative and verbal scales.

Activity Record File: Miscellaneous information such as students AFDC, GATE, bilingual, and special education statuses; permits (smoking, auto, off-campus); extracurricular activities; and contacts with health office, principal, counselors.

Master Record File: Basic linking file consisting of student's grade, sex, address, phone, other personal and family data (e.g, mother/father occupation; emergency contacts; health data; doctor name); FES, LES, NES, MGM codes; ethnicity codes; school entry/leaving date(s); etc.

Attendance File: Complete record of daily attendance including full days and partial days absent.

Cumulative Grade File: Total number of letter grades of each type (A-F), current GPA, total credits class rank, class size, expected graduation date.

Using these (and other) files, basic information on students such as class schedules, attendance data, test data, course grades, career and educational goal information, records of academic/social referrals and conferences, and miscellaneous extracurricular activities and activity permits can be stored, accessed, and used for various reporting purposes.

Using terminals (linked to the main frame) at the building level, administrators, counselors, and other trained staff can access (and print) data displays containing the following information:

1. Cross-referenced information: more than 175 variables, student indicators, and activities can be cross-related by the computer.
2. Current test data and history of test data.
3. Special education IEP data.
4. Attendance and re-admits.
5. Addresses and grids of residence.
6. Graduation requirements.
7. Permanent record card.
8. The four-year educational plan.
9. Student master record.
10. Activity-referral form.
11. Search class by the section number.
12. Course requests.
13. Student locator--look up and update.
14. Master schedule and section number.
15. Student continuum data (CMI test information).
16. Proficiency test results.
17. Career Magnet Schools: paths, programs and course plan.
18. Budget data.
19. School-wide academic and activity calendars.

A more complete description of the district's information system as well as a general discussion pertaining to hardware-software issues in using such systems at district and building levels is contained in the 1984 Deliverable by Ender.

A P P E N D I X D

Annotated Student- and Class-At-A-Glance Report Formats

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STUDENTS AT-A-GLANCE

SECTION:
TEACHER:

PREPARED ON 12 SEP 84

STUDENT NUMBER	STUDENT NAME	GRADE	CM SCHOOL	ED EXPECT	DAYS ABS	CTBS READ	CTBS LANG	CTBS MATH	GPA	ACAD SC	HOMEWORK	JOB	ACTIVITY	LIKE SCH
49043	ADAMS, WILLIAM B	12	.	4Y	.	.	.	.	1.1	H	+	P	3	+
49052	ANDERSON, JOHN L	.	.	HS	.	.	.	.	.	M	+	P	0	+
41950	BARRETT, ANDREW P	12	6	HS	57	33	14	3	1.9	M	-	H	0	-
49274	BARRY, LISA S	12	3	4Y	35	52	84	83	2.6	M	0	H	2	+
42468	BAYEE, LINDA C	12	3	2Y	17	34	54	3	1.8	H	+	N	2	+
49341	CANCU, JULIE M	12	3	2Y	18	49	67	0	2.7	H	+	N	0	+
43686	CAMPBELL, BRIAN R	12	4	2Y	11	80	88	80	1.6	M	0	H	0	0
49048	CARACCIOLO, BRIAN	12	6	2Y	23	68	72	68	2.9	M	+	H	0	+
42771	CARRILLO, D STEVE	12	6	HS	30	.	.	3	1.5	H	+	N	4	0
49050	EVANS, MICHELLE A	11	6	?	13	83	86	68	3.0	M	0	P	1	-
43177	FEENEY, TIMOTHY P	12	6	.	55	36	26	35	1.4	.	.	.	.	.
44197	FLETCHER, DAWN MI	12	6	4Y	27	19	7	7	2.1	M	+	P	3	+
49286	GALLEGLY, SHAWN M	12	1	4Y	7	66	84	95	3.8	H	+	P	3	+
49288	GILGENBERG, MARY	12	2	4Y	8	87	94	83	3.6	H	+	N	3	+
41828	GRCCE, SONIA R	12	6	2Y	37	10	12	2	2.4	M	0	F	0	+
49291	HARSH, TAMARA L	12	7	2Y	11	45	62	40	2.6	H	-	F	1	+
49069	HILLENBRAND, STEV	12	4	2Y	31	41	20	10	2.2	M	+	F	0	+
49294	HUEBARD, W FRANK	12	4	HS	35	.	.	.	2.1	M	+	N	0	-
49295	HULL, ERIC J	12	1	2Y	10	63	64	64	1.7	M	-	P	1	0
49301	KOVACH, ROBERT S	12	1	4Y	6	86	96	99	4.1	H	+	P	2	+
49303	LARSEN, TODD M	12	6	2Y	35	62	40	83	2.4	M	+	P	2	+
49306	LUTZ, DARREN K	12	4	2Y	17	1	3	.	2.5	M	-	H	0	-
49167	MAC NEAL, CHERYI	12	5	2Y	27	61	8	32	2.5	M	0	H	0	+
48395	MARSTAS, PATRICK	.	3	.	43	50	35	35	.	.	.	.	.	.
49168	MICHIELSEN, PIETE	12	4	4Y	10	83	77	92	3.2	H	+	N	3	+
49309	MILLER, PAUL A	12	6	4Y	35	80	70	60	2.8	M	+	H	2	+
49172	O DONNELL, THERES	12	3	2Y	46	23	30	28	1.6	M	+	N	0	0
43336	PRESTA, DAVID WAY	12	2	2Y	32	78	50	3	2.9	M	+	F	0	-
49129	RUSSELL, DANIEL R	12	2	2Y	30	16	28	45	1.6	M	-	N	1	-
42520	SALAS, JO ANN G	12	6	4Y	47	.	.	.	2.1	M	+	P	0	0
42793	SCHNEIDER, JUSTIN	12	6	4Y	30	99	74	43	2.5	M	+	P	0	+
43660	SHAW, KEVIN M	12	5	HS	45	.	.	.	.8	M	-	P	.	0
43179	SMITH, LOYAL DAVI	12	8	.	118	8	0	37	1.1	.	.	.	.	.
49323	SORVINO, GINA MAR	12	5	2Y	27	47	49	31	2.1	M	+	P	0	+
49109	SPELLMAN, DUANE A	12	4	HS	10	61	74	26	1.9	M	-	H	0	+
41481	SWABB, JONATHAN D	12	5	4Y	15	42	17	23	1.3	H	+	N	3	-
44147	SYNODIS, ALLISON	12	6	2Y	56	54	73	40	2.9	H	+	P	2	+
49262	TIGNAC, LOUIS LEO	12	1	2Y	31	92	52	95	3.1	H	+	P	0	-
49329	VIEZI, GINA	12	8	2Y	27	63	50	60	3.0	M	+	H	1	-
43580	WOOD, JOSEPH A	12	4	2Y	25	12	12	23	2.2	M	-	P	1	-

. = MISSING

CM SCHOOL: CAREER MAGNET SCHOOL. ← Reported on cover sheet of student survey
1=PHYSICAL SCIENCE AND TECHNOLOGY
2=INTERNATIONAL RELATIONS & POLITICAL SCIENCE
3=BUSINESS 4=INDUSTRY 5=PERFORMING VISUAL AND FINE ARTS
6=MENTAL, PHYSICAL & BIOLOGICAL SCIENCES 7=LIBERAL ARTS
8=ENTRY AND ESSENTIALS 9=DONT KNOW

ED EXPECT: EDUCATIONAL EXPECTATION. ← survey question #8
QU=QUIT HIGH SCHOOL HS=FINISH HIGH SCHOOL
2Y=GO TO TRADE/TECHNIC SCHOOL OR JUNIOR COLLEGE
4Y=GO TO 4-YEAR UNIVERSITY ?=DONT KNOW

DAYS ABS: NUMBER OF FULL DAYS ABSENT. ← District files

CTBS TEST RESULTS ARE REPORTED IN PERCENTILE RANK. ← District files

ACAD SC: ACADEMIC SELF CONCEPT. H=HIGH M=MEDIUM L=LOW ← Survey questions #15-23 (Based on total score)

HOMEWORK: +=ALL/MOST OF THE TIME 0=SOMETIME -=SELDOM/NEVER ← Survey question #102

JOB: P=FULLTIME(30+) H=HALFTIME(20-30) P=PARTTIME(10-20) N=NONE ← Survey question #4

ACTIVITY: NUMBER OF EXTRACURRICULAR ACTIVITIES(1-5). ← Survey questions #39-43

LIKE SCH: LIKE OF SCHOOL. +=LIKE 0=NOT SURE -=DISLIKE ← Survey question #74

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CLASS AT-A-GLANCE

FALL 84

SECTION NO: XXXX
NO. ENROLLED STUDENTS: 35
NO. STUDENTS TAKING SURVEY: 35

← District files

INSTRUCTIONAL GROUPING PREFERENCES

← Survey questions #106-109

```
ALONE              XXXXXXXXXXXXXXXXXXX--**************
WHOLE CLASS        XXXXXXXXXXXXXXXXX------*************
HOM SMALL CLASS    XXXXXXXXXXXXXXXXXXXXXXXX----*******
HET SMALL CLASS    XXXXXXXXXXXXXXXXXXXXXX---**********

     XXX LIKE     --- UNDECIDED      *** DISLIKE
```

LIKING OF MATHEMATICS

← Survey questions #92-100

```
LIKE VERY MUCH
LIKE SOME          ***************************
UNDECIDED          ************************
DISLIKE SOME       *
DISLIKE VERY MUCH  *
```

STUDENT ACTIVITY PREFERENCE

← Survey questions #123-138

```
LISTEN TEACHER     XXXXXXXXXXXXXXXXXX-------********
GO FIELD TRIPS     XXXXXXXXXXXXXXXXXXXXXXXX---******
DO RESEARCH ETC    XXXXXXXX---************************
LISTEN STUDENT     XXXXXXXXXXXX-------***************
LISTEN SPEAKER     XXXXXXXXXXXXXXXXXXXXXXXX--*******
CLASS DISCUSSION   XXXXXXXXXXXXXXXXXXXXXXXX----*****
BUILD/DRAW THING   XXXXXXXXXXXXXX----------*********
DO PROBLEM/ANSWER  XXXXXXXXXXXXX---------**********
TAKE TEST/QUIZ     XXXXXXXXXX------*****************
MAKE FILM/RECORD   XXXXXXXXXXXXX-------**********
ACT THINGS OUT     XXXXXXXXXX--------***************
READ FOR FUN       XXXXXXXXXXXXXXXXX---------*******
READ FOR INFO      XXXXXXXXXXXXXXXXX------**********
INTERVIEW PEOPLE   XXXXXXXXXXXX---------**********
DO PROJECT PLNED   XXXXXXXXXXXXXXXXX-------**********
DO PROJECT I PLN   XXXXXXXXXXXXXX----------**********

     XXX LIKE     --- UNDECIDED      *** DISLIKE
```

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DISTRIBUTIVE PROCESSING ISSUES IN EDUCATION INFORMATION SYSTEMS

Philip B. Ender

This report is concerned selected issues and problems in establishing and operating computerized information systems in local educational systems. Schools and districts generate and store tremendous amounts of information. Some of this information is strictly administrative: personnel records, inventories, purchase orders, etc. while other information has implications at the instructional level: test scores, grades, absences, etc. The utilization of information occurs at multiple levels: teacher, counselor, principals, district administration, superintendents, and school boards (Burstein, 1984; Durant & Cooley, 1984). Until recently, the management of information has been centralized at the district level (with the exception of manual filing systems at the classroom and school level). Schools and districts have been slow to take advantage of the advances in information management that have taken place in the last decade (Hathaway, 1984).

One common complaint, at the school level, is that the district data processing center is not responsive to the school's need for information. Either, it takes too long to get reports from the district or the district does not provide data necessary to make appropriate educational

decisions at the school, class, or student level. One solution is to allow the users of the information, using remote terminals or microcomputers, located in the schools, to generate reports and analyze data in a manner most useful to their own needs.

One area in which information has been available at the school and teacher level is Computer Managed Instruction (CMI), in which items or tests are selected from a test bank and progress reports of student status are generated. This is one area in which there seems to be some cooperation between district level data processing and the needs of educational decision makers (Dussault, 1984; Idstein & Schmalz, 1983).

The perspective of this report is based on exeriences gained in working with a high school in a suburb of Los Angeles. For the purposes of this report, the high school will be referred to as Site A while the district will be referred to as the Valley Unified School District. This predominantly middle and lower SES district has data and information problems similar to many other school districts nationwide. Valley Unified has a centralized data processing center, whose administrators are open to advances which will improve information utilization in the district. Appendices I through V describe the Valley Unified computer system and management information system in more detail.

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The purpose of this report is to discuss the issues and to examine the problems that can arise in trying to implement school and teacher level access to data and use of information. This report highlights two basic approaches to information processing:

1. Centralized data processing -- With this approach a district uses one mainframe computer system with on-line remote terminals in various locations throughout the district. All queries, reports, and analyses are processed on this one computer system.
2. Distributed (decentralized) data processing -- This approach makes use of multiple computer systems, usually one central mainframe computer system and a number of microcomputer systems located throughout the district. These microcomputer systems can be used as remote terminals to the district mainframe or they can be used as stand alone computer systems, analyzing data independently of the district's mainframe. (see Table 1)

MAINRAMES vs MICROCOMPUTERS

Mainframe computer systems and microcomputers function in basically the same manner, they differ in size, capacity, and speed of processing. Mainframe computers often fill large rooms and have their own air conditioning and electrical systems. Mainframes require trained operators

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and programmers. They are very expensive to purchase and operate but are cost effective because they can process large amounts of data very quickly.

Microcomputers, on the other hand, are small desktop sized computers that are relatively (compared to mainframe computers) inexpensive to own and operate. At issue is whether microcomputers as part of a decentralized data processing system can play a useful role in school and teacher level access to information.

While this section is labeled "Mainframes vs Microcomputer", it is not an either-or issue. For all but very small school districts, central mainframe computers will be an important element of both centralized and distributed processing systems. In distributed systems the processing is done by remote microcomputers but the master data files are still stored on the central mainframe computer.

DISTRICT vs SCHOOL ISSUES

Every school district office performs a large amount of data processing to meet its own needs. The kinds of data analyses are primarily accounting in nature, since much of the information will go to either the state or the federal government or is used in making funding decisions internal to the district.

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Schools indicate that they have a need for information that can be used to help make instructional decisions. The kinds of data and types of reports needed by schools may be somewhat different than those used by the district administration.

Much of the information collected and stored at the district level (test scores, etc.) could be of use to educational decision makers if it were either reported in a different manner or aggregated at a different level, say the classroom or school level (Burstein, 1984).

The idea is, that once the data is accessable to the schools, that teachers and/or administrators will be able to sit down at the terminal or microcomputer and ask questions about various aspects of student performance, behaviors, and attitudes. In the final analysis, the user (teacher, counselor, or administrator) doesn't care whether the computer system is an on-line centralized system or an off-line distributed system. The user only wants to be able to get information quickly and easily.

QUERY SYSTEMS: GETTING THE INFORMATION

Software (programs) that allows users to ask questions about information contained within the comouter are known generically as query systems. Query systems allow one to pose questions such questions as "which students have GPA's greater than 3.0 and reading percentiles above 95?" or

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"which students work more than 10 hours per week, listed alphabetically by teacher."

On-line query systems are expensive either to purchase or to develope from scratch. Many on-line query systems are very difficult to use, requiring practically programmer level skills to operate. Others may be relatively easy to use having a high degree of "user friendlyness". On-line query systems take up a lot of computing resources. One implication of this is that response time to questions can become very slow, taking up to half a minute or more. Further, the computer center cannot run as many other programs at the same time when an on-line query systems is running.

One very serious concern with on-line query systems centers around reliability of the system. With an on-line system when the mainframe computer malfunctions all the users, on their remote terminals, cease to operate. A small malfunction at the district computer center can interfere the work of literally hundreds of users. When processing is distributed, malfunctions on one microcomputer do not interfere with the work taking place on other microcomputers. The microcomputer-based (decentralized) systems can also operate independently of the district mainframe computer.

Query systems for microcomputers are neither very common nor very easy to use. They require a lot of

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computing power from the micro and sophisticated users (Idstein & Athey, 1984). Microcomputer query systems are comparable in difficulty (but not in processing power) to current on-line systems that have been implemented by some districts.

A major difference between on-line query systems and microcomputer based systems is one of cost. On-line query systems are much more expensive to develope or purchase (in the tens of thousands of dollars) than microcomputer based systems (in the hundreds of dollars). Costs aside, the microcomputer solution is often more attractive to users because it frees them from dependence on the district computing center.

At the same time, because of the power inherent in the district's mainframe, it is often easier to generate common reports for administrators and teachers on the district mainframe computer than to accomplish this on a query system. This holds true regardless of whether an on-line or an off-line query has been implemented. The district already has much of the information in their files and a staff of programmers that can develop these reports quickly and efficiently.

Having suggested distributed off-line processing and/or query systems as one possible solution to getting information into the hands of teachers, counselors, and

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school administrators the remainder of this report examines the implications, problems, and issues involved in distributive processing.

DISTRIBUTED PROCESSING CONCERNS

File Size Issues

In order for distributive processing on microcomputers to occur, data has to be transferred from files and databases on the mainframe computer to the microcomputer. One concern in transferring data from district mainframe computers to school microcompu'-rs involves the issue of the computer's memory capacity. Although microcomputers and mainframes work using the same basic principles, the mainframes usually have a much greater capacity in terms of internal RAM (Random Access Memory) memory and external disk memory. It is therefore necessary to break large files and databases into smaller chunks for processing on the microcomputers.

The breaking of files into smaller chunks is most easily accomplished by the mainframe itself. Files could be extracted for a particular grade level within one school or even down to the classroom level if necessary.

Today's microcomputers have internal memories ranging from 64K (64,000) bytes to just over half a megabyte. There is every indication that the trend is toward larger internal

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memories (Mainframe computers have much larger memories, measured in millions of bytes). The larger the internal memory of the microcomputer the more sophisticated programs it can run. Although not always true, one can generally count on the fact that larger programs will be easier to use and will run faster.

External disk memory is an important factor in the size of data files that can be used by the microcomputer. The larger the disk memory capacity the larger the data file that can be processed.

External disk memories for microccmputers can be of two types: Floppy disks or hard disk. Floppy disks have capacities of 140K to one megabyte. Again the trend is towards larger capacity floppy disks. Floppy disks have the advantage that with dual floppies, it is quite easy to make backup copies of important data on a regular basis. The main drawback is that floppy disk capacity is too small for many useful data storage needs.

The hard disk have much larger capacity than floppy disks. Hard disks typically run from 10M (10,000,000) bytes to 40M, 60M, and even 100M. These kinds of capacities are certainly sufficient for school level databases and files. The drawbacks to hard disks are their prices, expensive ($2,500 to $15,000); and the difficulty in backing up such large amounts of data on a regular basis.

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Backing-Up Data

It should be remembered that mainframe computers maintain a staff of programmers and operators, one of whose important tasks is to make regular backups of the data files. District computer centers do this on a daily basis. Every data file that is used during the course of the day is copied, usually onto magnetic tape, and saved. If anything should happed to the original file then the backup can be used to replace it.

Data files can be lost in a number of ways. They can be accidently erased, there can be a hardware failure in the disk system, or a power failure can occur while a data file is being used. These kinds of occurances are not that uncommon. It is very important to have backups of data files.

Off-line processing using microcomputers with floppy or hard disks need to develop policy concerning the backup of important files and programs.

Compatibility Issues

Attempts to develop distributed processing systems can run into several problems concerning compatibility of data files. Off-line processing implies that data files or sub-sets of data files be transferred from the district mainframe computer to local microcomputers in schools. If

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there are compatibility problems then these file transfers cannot take place.

Data Formats

Mainframes and microcomputers can have character formats which are incompatible with one another. Microcomputers typically use ASCII (American Standards Code for Information Interchange) representation for the printable characters and numbers. Many mainframes also use ASCII, but some may use other conventions, such as EBCDIC (Extended Binary Coded Decimal Interchange Code), found on many IBM mainframes. The software which transfer data files from the mainframe computer to the microcomputer must be able to translate from one representation to another.

Even when two computers can transfer data, it is not necessarily the case that the files transfered from the mainframe to the microcomputer can be read and used by the microcomputer. Files themselves have certain structures. Files from a mainframe computer may have a structure that is incompatible with file structures allowed on the microcomputer.

The ways in which numbers are stored can be very different between different types of computers. Some computer systems store numbers as packed decimals (in which every two digits of a number are represented in one byte) while others may store numbers as any one of a dozen

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different binary representations. Unless the numbers can be converted for one data representation to another, files cannot be effectively transferred from mainframe to microcomputer.

Language Compatibility

Whether we are talking about insurance companies or school districts, COBOL is the predominant data processing language. COBOL has built into it a number of features that make the use and updating of large files easy and practical. The major problem that occurs when one tries to use files created by COBOL with other, non-COBOL, programs is that the files are not necessarily compatibile. That is, it is possible for a COBOL program to create files that only a specific COBOL program can access. Although it is possible to use COBOL on some microcomputers, it is not necessarily compatible with the COBOL that is found on mainframe computers.

Typical data files for major statistical packages, such as SPSS, SAS, and BMDP make use of sequential text files. Sequential text files store information contiguously in one area on the disk. For example, to obtain information on the twenty-fifth student in a file, you would have to read through all the information on the first twenty-four students. Many microcomputer statistical programs and

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database systems also make use of sequential files, although equally many use their own unique structures.

COBOL files, on the other hand, maintain unique structures that can involve the use of random access files. That is COBOL allows for the use of pointers that can go from one location in a file to another location without having to read all the information in between.

To use the COBOL files with an off-line distributive processing system requires a program that can read the COBOL files and translate them into sequential text files. This is most easily accomplished if the district's mainframe could merge the necessary files and generate the appropriate sequential text file.

Multiple Files

Not only does COBOL allow for the use of pointers within a file but it also allows for the simultaneous use of multiple files. District data processing systems working in COBOL typically split their databases up into many subfiles. Thus, in COBOL based systems, it is typical for information needed in a single report to be found in many different files. For instance, there can be a Student Master File, an Attendance File, a Class Roster File, and so on.

Distributive processing systems may not allow for more than one or two files to be in use at one time. When working with off-line microcomputer-based systems, it may

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become necessary to merge the required files together into a single file.

There are some microcomputer programs that allow the use of multiple files. Dbase II (and the brand new Dbase III) is a microcomputer database management program which allows several related files open at one time. In this respect it is similar to COBOL; however, the Dbase files themselves directly are not compatible with COBOL files. Another, very popular database system, DB Master makes use of its own structure.

Although it is more efficient during normal data processing on the mainframe to make use of COBOL's unique file structures and multiple files, it is usually possible to write a program that will combine (merge) the necessary COBOL files into one sequential text file for use on a microcomputer.

Archival Files

Another difficulty in analyzing district mainframe files at the school level on microcomputers is that the files may be stored as archival files. That is, the files could contain information on the students for every year or semester that they were enrolled. Thus records for a given student may appear many times within the same file. This creates no problem for the mainframe system since their COBOL program uses pointers that quickly locate the most

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current record for any given student. However, in working with data on off-line microcomputer systems, there can be a lot of confusion about which entry is the correct one for any given student. Further, archival files are usually too large for microcomputers to handle. Therefore, it is necessary when creating files for use on microcomputers to download (transfer) only the most current or active record for each student.

Communication Issues

Many of the issues looked at so far are concerned with the use of files derived from mainframe computer systems. Nothing has been said about the process of moving the information from mainframe to microcomputer. Communications, in this context, refers to the communication between mainframe computer and microcomputer.

Computers can be hooked-up together in two ways: 1) direct connect and 2) dial-up. Direct connect means that the two computers are physically wired together. Dial-up systems make use of a telephone hook-up between computers. In order to make use of a dial-up arrangement each computer must be equiped with a modem (Modulator/Demodulator). Modems are rated in terms of how fast they transmit data. 300 BAUD modems transmit about 30 character per second while 1200 BAUD modems can transmit about 120 cps. 1200 Baud modems are the newer technology and consequently cost more.

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At the microcomputer end 300 BAUD modems run between $100 and $250, with 1200 BAUD modems in the $400 to $600 range. On the mainframe side of the hook-up modems are much more expensive, in the thousands of dollars. Because of the cost of changing over, many district computing systems still operate at 300 BAUD.

On the face of it, communications between mainframe computers and microcomputers seems to be very straight forward. Both the mainframe and the microcomputer require a modem set to the same baud rate. However, very little involving the use of computers is strictly a hardware issue. In order to have effective communications, each system requires the appropriate communications software. In addition to transferring data from one system to another, the communications software may have to translate data so that it will be compatible for each system.

Typically this is done through the use of a communications package in the microcomputer. This communications package allows the micro to operate as a terminal to the mainframe, that is, the microcomputer behaves as if it were a remote terminal connected to the mainframe. It also allows the microcomputer to download files (transfer files from mainframe to microcomputer) and upload files (transfer files from the microcomputer to the mainframe). The mainframe also needs to have appropriate

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software that allows for communication with microcomputer acting as remote terminals.

In university based systems communications between the mainframe and microcomputers can take place in one of two ways:

1) The microcomputer communicates directly with the mainframe's on-line interactive editor. Or
2) the microcomputer communicates through a file transfer program that directly transfers files from system to system.

Either of these systems is usually satisfactory. The choice usually comes down to whether the user is just going to transfer files or will be running programs and viewing the results on the microcomputer.

Universities tend spend a lot of time and money to make communications easy and efficient. School districts, typically, do not have the same resources to develop such sophisticated communications systems. The idea of hooking up microcomputers to the district's main computer is relatively new so many districts have not as yet dealt with the many problems involved in communications.

Graphics

Graphic displays are one area in which microcomputers seem to have an advantage over the mainframe, especially data processing mainframes. There is a lot of very good

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graphics software available for microcomputers. By and large, the microcomputer graphics software is less costly and easier to use than the maonframe variety. It is certainly possible to download files from the district mainframe to the school microcomputer and produce high quality graphs and charts.

There are some problems with graphic display of data that have to be anticipated. For one, there is the issue of the data format and/or file structure. While both these issues may have been dealt with at the microcomputer level, the graphics program may require yet another format or file structure. Very often graphics programs have special formats that preclude the use of general sequential text files. Some graphics programs want only the data for the graph being plotted and not all the other data associated with it. Thus, data for a graph of GPA versus hours worked would have to be extracted from the larger database file.

Another potential problem is concerned with the production of large numbers of graphs and charts, say one for every class. The problem here lies in the fact that most graphics software is designed to produce custom graphs or charts and is not designed for batch production of hundreds of the same graphs and charts are produced on slightly different sets of data.

Multiplicity Of Databases

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One problem that can occur when users download parts of larger databases, for local use on microcomputers, is that multiple nonequivalent versions of the database can be formed. This comes about because local users update their local database with different information that does not find its way into the centralized database. In a short time, it is possible to get different answers to the same question depending upon which computer and which database is queried (Idstein & Athey, 1984).

Codebooks

Another area where one should exercise caution is in terms of the internal data codes that are used by district data processing programs. Sometimes information may be stored as actual values, at other times information is coded and abbreviated. Often only the system programmers have access to the codes and abbreviations that are used. This is because users of the mainframe system use only the programs written by the district and do not use the files themselves.

In research settings, codebooks are commonly produced and distributed to all workers on a project. Such codebooks aren't always easily available for district mainframe data files. A considerable amount of time may be spent working with the district data processing people, developing a codebook for the data files.

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The Idstein & Athey (1984) and the Murray (1984) papers list a number of other problems that can occur in implementing educational information systems. For example: audit trails lost; the tendency to want to collect and store everything; more errors in data entry, due to more points in the system where errors can occur; redundant reports; incomplete and poorly organized reports; need for more training at all levels; more hardware problems, due to more hardware; need for on-line help facilities; need for a user support service.

Using microcomputers in the schools to assist in making educational decisions is a relatively new undertaking. There are still many problems to be identified and solved before their use becomes a common practice. Microcomputers and their software are becoming more powerful and sophisticated everyday, and what may be difficult now, will surely be easier in the future.

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Table 1
Comparing Centralized *vs* Decentralized Computing

	Centralized Computing System	Decentralized Computing System
Type of computer(s):	One mainframe computer.	Many microcomputers.
Type of processing:	On-line processing	Off-line processing.
Processing done on:	Remote terminals.	Remote computers.
Size:	Large, room sized.	Small, desktop sized.
Computer malfunction:	All terminals down.	Only one computer down.
Processing speed:	High speed.	Slow speed.
Response lag:	Can be very slow.	Very fast.
Internal memory:	1M +	64K to 512K
External memory:	100M +	140K to 60M
Operators:	Highly trained.	Not much training.
Operating cost:	Very expensive.	Moderately expensive.

Appendix I

Valley Unified School District
Computer Center

Computer Mainframe: Burroughs B6800 purchased in 1978.

Main Memory: 1.2 million bytes.

Disk Memory: 1.2 billion bytes.

Other peripherials: 2 tape drives, 2 printers, a mark sense scanner, 120 terminals.

Twenty to 25% of the computer time devoted to district accounting needs. Approximately 75% of the computer time devoted to student administration needs.

One hundred thousand to 120,000 pages of reports per month. Thirty-five percent of the reports are special requests from the schools or the district office.

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Appendix II

Valley Unified School District
Educational Data Processing Services

In 1969, the Valley Unified School District embarked upon a long-range plan to automate many of its information processing needs. This appendix contains a summary of the current status of their system.

PHILOSOPHY AND OBJECTIVES

1. To control growth of administrative and clerical costs.

2. To produce in a meaningful and timely manner all operating and comparative information needed for effeicient district operation.

3. To provide information for evaluating educational programs based on student achievement.

4. To provide a Vocational Program in Data Processing.

5. To make computer time available to both teachers and students.

6. To eliminate duplication of effort by maintaining one central file on all information which meets both internal and external needs of the district.

7. To eliminate known inefficiencies that arise from inadequate, slow, untimely, or unavilable information.

To provide data processing services to additional school districts.

BASIC SYSTEM FUNCTIONS

The following is a description of the files that are used in the basic system functions of the Educational Data Processing Services. These files and the description of thier use gives a good overall picture of how the system functions and how the various pieces fit together.

STUDENT MASTER FILE

The Student Master File is the key to the entire system. Almost every program within the system relies on the Student Master File for various forms of information. This file is updated on a daily basis from remote terminals. As a protective feature, updating can only be accomplished from a terminal in the student's own school.

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STUDENT SCHEDULING

The scheduling package handles a variety of methods in scheduling students such as traditional, flexible, and modular scheduling. The schedule must be able to accomodate a four quarter system with up to 20 periods a day. The system is generalized to the point of allowing each school to have a totally different method of scheduling classes and activities.

PERMANENT RECORD

The permanent record contains both grades, credits, and test scores. The main source of input for this file is from the grade reporting system and the yearly test scoring procedure.

ATTENDANCE ACCOUNTING

The attendance accounting system services the average daily attendance requirements and it is also used as a counseling tool. Prior to installing remote terminals, it was not feasible to autimate period attendance, as is currently done.

PROFICIENCY TESTING

The proficiency testing system is designed to measure how proficient a student is in a given discipline. To accomplish this task, the various disciplines of reading, language, and math are divided into subskills for testing.

STANDARDIZED & TEACHER MADE TEST SCORING

Test scoring information is gathered through the use of marked documents which are produced from both the student master file and student schedule files. The system reads in the mark sense documents, convert the responses to raw scores based on a key, and convert the raw scores to converted scores based on computation or table look up.

INDIVIDUAL EDUCATION PLAN (I.E.P.)

This system manages data for handicapped children's education program. Parents work with school personnel, jointly making decisions regarding the childs needs. The computerized I.E.P. is used as a management tool to insure that each handicapped child is provided special education and related services.

COMPUTER MANAGED INSTRUCTION (CMI)

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This system keeps track of student progress/proficiencies in basic skill areas. Currently it is being utilized in Math, Reading, and Language.

INSTRUCTIONAL MEDIA

This system is based on a library cataloging application which is maintained by remote terminals. The files contain media titles, subjects, authors, annotations, and publishers. Media catalog, indexes, and shelf lists among othe things are also available from this system.

ADULT EDUCATION

The Adult Education System is used for maintaining a student's Master Record, Schedule of Classes, grades, credits, and Proficiency Test Scores. Data is entered into the system by optical scanned forms and/or terminals.

PERSONNEL RECORDS

Personnel accounting functions are totally integrated into a computerized filing system containing most of the operational data required by the district. This file contains such things as name, address, phone, emergency data, credentials, employment history, skills inventory, fringe benefits, etc.

BUDGET PREPARATION

The budgeting system is the basis for the entire appropriation ledger accounting system. The budget files contain information which reflects almost every conceivable major item being-budgeted for in the oncoming year.

APPROPRIATION ACCOUNTING

The appropriation accounting system is an up to date history of all emcumbrances, expenditures, transfers, abatements, and other sorts of transactions. This file is maintained through many sources such as the receiving department, accounts payable, purchasing department, etc.

ACCOUNTS PAYABLE

The system has the capability of receiving invoice data, comparing it ot the purchase order data, and kicking out the transaction if all things are not equal. If invoices match, previous prices and receivables, the system will make an entry into the appropriate ledger file.

PURCHASE ORDER GENERATION

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The system produces purchase orders using a standardized catalog which reflects almost every item that the district purchases during the year.

FURNITURE, EQUIPMENT, & SUPPLY CATALOGS

The primary function of this file is to supply information for generating purchase orders, keeping track of amounts in order, year to date amounts received, printing out various catalogs, and keeping track of warehouse inventory reorder quantities, etc.

INVENTORY CONTROL

Through the use of an automated system, operational supplies are maintained on a constant basis in the district warehouse. Terminals placed in every department and school initiate the automatic handling of warehouse supply requisitions.

PROPERTY MANAGEMENT

The system is used to maintain an ongoing inventory file of all equipment items which are valued over twenty-five dollars. This file contains item description, acquistion date, acquisition price, serial number, purchase order number, amount purchased, and physical location within the district.

PROPERTY MAINTENANCE

Through the use of an automated system, work orders are received by Maintenance and Facilities. As work is warrented, requests are given to the designated personnel in each School/Department and a work order is initiated via the terminals.

CRIME REPORTING

The Crime Reporting System maintains a detailed record of Crime/Vandalism within the district and a summary of cost breakdowns and types of crimes.

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Appendix III

Valley Unified School District
Standard Reports

The following is a list of the standard reports which are generated by the Educational Data Processing Services. The report titles are classified by the basic system function they serve.

STUDENT MASTER FILE
Teacher Information Sheet
District Student Address Directory
District Master Address Report
Student Living Attendance
Locker Assignement Log
Self Scheduling Course Request

STUDENT SCHEDULING
Students Listed by Course Priorities
Course Master List
Course DEpartment List
Master Schedule Exception Report
Master Schédule Proof List
Course Request Listing
Potential Conflict Matrix
Section Enter/Drop List
Activity Calendar
Student Graduation Status
Grade Reporting Exceptions
Drop, Fail and Unsatisfactory List
Principals Recognition List
Grade Proof Report
Grade Proof List
Grade Distribution By Subject
Grade Distribution By Teacher
Progress Report Exception List
Teacher Progress Report Proof List
Sports Ineligibility Report

PERMANENT RECORD
Perminant Grade Record

ATTENDANCE ACCOUNTING
Students Living In Attendance Boundry
Valid Locator Count
Uncleared Absent Report
Weekly Attendance Report
Unexcused Absence Report
Bimonthly Frequent Absence Report
Attendance Exception Report
Attendance Detail Report

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Principals Attendance Report
Monthly Attendance Report
Attendance Record For AIT
Enrollment By Grade And Sex
Enrollment Summary
Summary By Special Classes
Monthly Enrollment Report
Weighted Class Size Report
Trend For Weighted Classes

PROFICIENCY TESTING
Rasch Testing Values
Proficiency Testing Detail Report
Test SCore Distribution
Proficiency Testing Results
Proficiency Testing Status
Proficiency Response Report By Test

STANDARDIZED & TEACHER MADE TEST SCORING
Physical Performance Test
Teacher Instructional Strategy
Student Detail Report For Group Testing
Class Summary Report For Group Testing
School Summary Report For Group Testing
District Summary Report For Group Testing
Simple Response Tally
Title I List By Teacher
Title I List By Grade
Individual Studet Quartile Ranking
School Quartile Summary By Grade
Students Below 37th Percentile in Reading and/or Math
Scores And Wrong Response Record
Frequency Analysis
Frequency Distribution With Percentiles
Standford Early School Achievement Test

INDIVIDUAL EDUCATION PLAN (I.E.P.)
I.E.P. For The School Year
Ongoing Individual Education Plan
Drivers Ed List
Special Education Classification List
Special Education Pupil Count
Unduplicated Age Classification Count
Ethnic, Sex, LES-NES Classification Matrix
Special Services Tally
Student Flow
New Student Classification Ethnic Code Matrix
Regular Program Participation Tally
Adaptive PE List

COMPUTER MANAGED INSTRUCTION (CMI)
Individual Student Profile Of Incompleted Tasks
Tasks Yet to Be Completed
Continuum Status Report

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INSTRUCTIONAL MEDIA
Media Center Audio-Visual Department List
Library Maintenance
Library Media Additions
Media Inventory By Dewey Prefix

ADULT EDUCATION
Teacher Sequence

PERSONNEL RECORDS
Follow Up List For Rehire Letters
Certificated Employees
Position Codes
Location Codes
Subject Codes
Classification Salary Schedule
Classification Management Salary Schedule
Personnel Position/Location Report
Employee Master Record
School District Bargaining List
Personnel Information
Quarterly Personnel Payment Record
Payroll Listing
Processing Transactions
Employee Retro Report
Payroll Balance Listing
Credential Report
Insurance Carriers
Employee Insurance Categories
Employee Credential And Education Record
Insurance Analysis Report
Monthly Insurance Report
Employee Insurance Record
Employee Probation Report
Applications Status Report
Classification Salaries
Quarterly Personnel Payment Record
Certificated Payroll Information
Notification Of Salary Placement

BUDGET PREPARATION
Buget Request Form
Balance Buget Input
Buget Balance Totals
Requested Buget
Responsibility Detail
Object Detail
Object Summary
Preliminary Buget
Tentative Buget
Program Detail
Program Summary
Program Detail By Object
Published Buget

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State Program Summary
Final Buget
Current Cost of Education Per Average Daily Attendance
Responsibility Summary
State Program Detail

APPROPRIATION ACCOUNTING
Regular Board Meeting Agenda
Accounts Appropriation Ledger
Cost Distribution
Appropriation Expenditure Transfer Report
Appropriation Ledger
Level Summary
Payroll Expenditure Error Report
Disencumber Total
Ledger Update Error Report

ACCOUNTS PAYABLE
Appropriation Ledger Direct Entry Proof Totals
Invalid Invoices
Current Year Expended
Invoicer Report

PURCHASE ORDER GENERATION
Purchase Order
Balance Outside Purchases
Invalid Requisition Report
Purchase Order Follow-Up Report
Invoice Not Received Report
Inventory Status Report
Receving Report

FURNITURE, EQUIPMENT, & SUPPLY CATALOGS
General Purpose Catalog
Warehouse Picking Report
Subscription Catalog
Authorize Bid Acceptance
Vendor Organization Plan
Bid Form

INVENTORY CONTROL
Monthly Statement of Warehouse Charges
Warehouse Requistion Activity
Warehouse Transaction Report
Back-ordered Warehouse Requisition
Back-ordered Items
Inventory Status Report
Warehouse Inventory Verification

PROPERTY MANAGEMENT
Fixed Data By Noun
Fixed Data By Stock Sequence
Noun Listing
Verb Listing

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Manufacture Listing
Serial Master Maintenance
District Serial Master File
Furniture and Equipment Inventory
Furniture and Equipment Inventory Maintenance.

PROPERTY MAINTENANCE
Workorder Status Report

CRIME REPORTING
Crime Report
Crime And/Or Damage Reporting

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Appendix IV

Valley Unified School District
Sample of Non-standard Report Requests

Many reports and printouts generated by the district computing center are derived from user requests. These requests may be submitted in writting or they may be direct requests for reports from remote terminals. These non-standard reports and printouts may be generated only once or at most a few times. If there is sufficient need for a non-standard report, it can then be incorporated into the Basic System Functions. The following is a sample of some of the non-standard reports that have been requested by the schools and district office.

ACCOUNTING AND BUSINESS FUNCTIONS
LIST OF ACCOUNTS BY PROGRAM & DISTRIBUTION
LIST OF DATA COM PROGRAM WITH DA/TIME CODE=2
ALL DATA FILES USED IN REPORT GENERATOR
GENERAL FUND 4000 ACCOUNT SUMMARY
PROGRAM LIST OF ALL BUSINESS PROGRAMS
ACCOUNTS WITH NO ACTIVITY FOR 3 YEARS
OPEN PURCHASE ORDERS
DATA COM TRANSCODE WITH THEIR PROGRAMS
REPORT WORDS USED FOR GENERATING REPORTS
LIST OF ACCOUNTS BY PROGRAM AND DISTRIBUTION
GRID ANALYSIS USED OTHER RINFOR SPECS TO CREATE DATA

PERSONNEL REPORTING FUNCTIONS
LIST OF ALL ACTIVE APPLICANTS
LIST OF EMPLOYEES WITH TOTAL MONTHS OF SERVICE SORTED

STUDENT REPORTING FUNCTIONS
LIST OF STUDENTS IN CAREER MAGNET SCHOOLS
IMMUNIZATION REPORT FOR LAST YEARS STUDENTS
MILITARY LIST BY SCHOOL AND GRADE
ROOM LIST WITH PARENTS NAME AND PHONE
LIST OF ALL STUDENTS IN WORK EXPERIENCE CLASSES
STUDENT ABSENCES WITH LUNCH PASS
TO THE FAMILY AT:
ACTIVITIES OFFICE ATHLETIC FEE LIST
11TH GRADE STUDENTS
YEARBOOK LIST
STUDENT POPULATION BY SCHOOL
HISPANIC STUDENTS WITH GPA>3.0
LIST OF FALL REFERRALS COMPARED TO SPRING REFERRALS
TO THE PARENT'S OF
CAREER MAGNET SCHOOL ZERO LIST
LIST OF STUDENTS IN A.P. CLASSES
9TH GRADE STUDENTS NOT ENROLLED IN MAGNET SCHOOLS
ESL BILINGUAL STUDENTS

LAST KNOWN ADDRESSES OF CLASS OF 77
LIST OF FIRST REFERRAL DATA FOR APPLICANTS
LIST OF ALL STUDENTS WITH RIGHTS OF 18 YEAR OLD
SPECIAL ED STUDENTS
LIST OF ALL BOYS WITH GRADE/COUNT
LIST OF ALL GIRLS WITH GRADE/COUNT
LIST OF ALL STUDENTS WITH CREDITS EARNED 50 OR LESS
LIST OF ALL STUDENTS INTEACHER AID CLASS
CMS NON-ENROLLEES
LIST OF FIRST REFERRALS ON YES SYSTEM
PERCENTILE > 95 FOR 8TH AND 9TH GRADERS
18 YEAR OLD STUDENTS WITH ATTENDANCE PROBLEMS
ALPHA HOME ROOM LIST
HISPANIC STUDENTS WITH GPA>1.9 WITH ATTENDANCE PROBLEMS
ATHLETIC PARTICIPATION AND ATTENDANCE
TOTAL READING PERCENTILES
STUDENT BIRTHDATES
SPECIAL TEST
MASTER LIST OF STUDENTS IN CMS
10/11 GRADERS WITH GPA>3.0 FOR CONVENTION
10/12 GRADERS WITH GPA>3.6 FOR DODGER TICKETS
STUDENTS THAT ARE ON FREE LUNCH
LIST OF ALL STUDENT CREDITS EARNED OF 190 OR LESS
ALPHA LIST BY TEACHER
GPA LIST BY SCHOOL AND GRADE
3RD PERIOD LIST WITH STUDENTS AND BIRTHDATE
LABELS BY GRADE OF HONOR ROLL STUDENTS>2.99
MASTER LIST OF STUDENTS WITH GPA>3.2 AND PERCENTILE
CTBS BATTERY FILE
LIST OF ALL APPLICANTS IN YOUTH EMPLOYMENT SYSTEM
12TH GRADERS WITH GPA>2.99
ALPHA LIST WITH NAME GRADE AND PHONE NUMBER
LIST OF STUDENTS SORTED BY TOTAL CREDITS EARNED
LIST OF STUDENTS PERCENTILE WITH LESS THAN 51%
SUSPENSION REPORTASB CARDS AND YEARBOOK PURCHASERS
ASB/YEARBOOK PURCHASES BY GRADE & GPA

<u>MISC</u>
LIST OF CHAPTER I CHANGES

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Appendix V

Site A High School
Computerized Acountability for Student Achievement

The original design of the Computerized Accountability for Student Achievement (CASA) Project proposed to correct the problems that counseling staffs at the secondary school level have with managing information effectively. The necessity of increased efficiency in managing information was the driving force behind CASA.

Project Assumptions

1. The Counseling and Guidance Service is one of the most valuable resources available to the students.

2. The counseling program has not been a program for change or adjustment to student needs. Little accountability has been required from counseling programs in the past.

3. Counselors, administrators, and teachers are not privy to accurate, up-to-date, specific set of information indicators which could lead to changes in the understanding of student needs and to concrete changes in student curricular priorities.

4. The frustration of parents is often elicited by conflicting and inadequate reports of student progress. Students also feel a similar frustration when placed in a position of inadequacy and dependence on a potentially mis-informed authority which lacks accurate information.

Project Objectives

1. Provide for the accountability of counseling and guidance services.

2. Provide varieties of relationships between student variables and trends associated with programs.

3. Provide information for staff development, curricular design and program development.

4. Capability of analysis of relationships and trends concerning critical student problem areas such as truancy, dropouts, substance abuse, etc.

5. Produce students' manes through an analysis of high risk profiles in order that intervention programs can be designed and implemented.

6. Provide on-line retrieval of information regarding class numbers, individual and group competency, and levels of performance.

7. Provide continuous objective information for educational and career decision-making based on past performance, current status and future goals.

Information Use in Local School Improvement: A Multilevel Perspective*

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School systems have had rich information environments for quite some time. One need only browse the list of information typically available in local school districts (see Table 1) to realize how much data is routinely gathered and maintained in some fashion. Until recently, however, many school districts lacked the financial and human resources (and often, the incentives) necessary to make the available information serve as a viable component of decision-making in ongoing, enduring school improvement efforts.

Obviously, times have changed as is evidenced in other papers in this symposium and related work (e.g., Bank and Williams, 1983). The collection, analysis and maintainence of both achievement and non-achievement data within a comprehensive information system in order to (1) examine the functioning and impact of existing school programs, (2) monitor key school "health" indicators and (3) plan, guide and examine new instructional improvement initiatives is becoming a common feature of the local educational scene. These activities are both a sign of the times (once again, education and educational improvement matter) and an indirect by-product of the technology explosion and the improved sophistication of LEA research and evaluation personnel that resulted from evaluation and testing requirements associated with compensatory education programs. If Lyons, Doscher, McGranahan & Williams (1978) were to replicate today their study of evaluation practices in school districts, lack of computer resources and expertise and staff technical skills would be much less severe problems. To a great extent the knowhow and wherewithal exist within school districts to make their available information useful for decision-making with respect to a variety of local issues and problems.

Now that the expertise and technology are possible, it seems appropriate to devote more attention to fine-tuning local school data analysis and reporting to make practices in these areas (a) more sensitive to the substantive decisions school personnel must make and (b) better reflect the methodological state of the art. To this end, this paper examines selected analytical issues that arise in making information obtained from the multiple levels (pupil/parent, teacher/class, school, district, community) of local school settings useful for decisions at the various levels.

Even after a local school community has decided to undertake school improvement and allocates the resources to develop information systems for use in their efforts, questions remain about how the relevant information should be treated analytically. Although most districts routinely collect much of the pertinent data for school improvement efforts, these data are seldom analyzed and reported in a manner consistent with extant knowledge about the possibilities and limits of information from multilevel social structures. Since the same data (e.g., from standardized achievement or competency tests; parent, student, teacher, and administrator surveys; archival and demographic records) can take on different meanings when analyzed and reported at different levels (e.g., class vs. school) and by different indicators at the same level (e.g., the school average vs. the proportion exceeding a specified level of mastery), comprehensive information systems need to be designed to make valid, pertinent knowledge accessible for constituents at the multiple levels. This concern for knowledge utility and accessibility may require that the

same data be reconfigured (or simply reported differently) for different users. Moreover, multilevel analyses, albeit handled in a technically appropriate manner, must be reported in a form suitable for the analytically unsophisticated.

In the remainder of the paper, we briefly discuss several methodological issues derived from a multilevel analytic perspective on local school improvement. This discussion draws heavily from both my previous work on analysis of multilevel data (Burstein, 1980, 1981 in press; Burstein and Linn, 1982; Burstein, Linn & Capell, 1978; Burstein, Miller, & Linn, 1982) and from a longer conceptual synthesis that attempted to apply the general multilevel method framework to the local school improvement context (Burstein, 1983). The examples cited are taken from both applied research and from school district information and practices (both hypothetical and real).

The Nature of a Multilevel Perspective

Local school districts engaged in school improvement would appear to be settings particularly amenable to adopting a multilevel perspective regarding the collection, analysis, interpretation and reporting of information on school contexts, programs, and outcomes. To be internally consistent with this perspective, it is necessary to employ an analytical methodology that examines data from the different levels (student, classroom/teacher, school, district) of the educational system and their interconnections. Such a methodology incorporates both a multilevel conception and an accompanying willingness to disentangle effects from a variety of sources and

levels (Figures 1 and 2 depict the data sources, data domains, and aggregation levels likely to be of interest in most school settings.) One must begin with a belief that no level of the educational system is uniquely responsible for the delivery of and response to schooling and thus substantive questions should rarely be confined to a single level (Burstein; 1980, in press; Rogosa, 1978). Thus a multilevel perspective and associated investigation focuses on the interface of individuals and the "groups" to which they belong and on the implications of this interface for understanding schooling.

There have been a number of syntheses of relevant research that focus on the theoretical, conceptual, and empirical bases for the impact of the multilevel character of educational systems on the measurement and identification of the antecedents and correlates of educational performance (Madaus, Airasian & Kellaghan, 1980; Barr & Dreeben, 1983; Bidwell & Kasarda, 1980a, 1980b; Burstein, 1980a, 1980b; 1983, in press; Cooley, Bond & Mao, 1981; Cronbach, 1976; Miller, 1981). These authors build a case that schooling can be better understood by, among other things,

- utilizing an array of group-level (class, school, etc.) indicators that are potentially sensitive to differential performance associated with differential resource allocation strategies
- employing test analysis procedures that are likely to reflect instructionally sensitive variation in performance
- linking a conceptualization of an educational process to its measurement and analysis at various levels
- using analytical procedures that potentially identify effects at and within each level of the educational system

Each of these points identifies analytical issues addressable from a multilevel perspective that becomes especially salient in information-rich school improvement contexts. In the remainder of the paper, we discuss and illustrate each point as it might arise as part of a school improvement effort. In doing so, we focus on group/social/organizational rather than individual/clinical uses of information for class-level, school-level and multi-school decision-making[1].

Alternative Indicators of Group Performance

Much of the analysis and reporting of achievement and non-achievement (e.g., attendance, taking of advanced course-work) indicators of educational performance is conducted at the group level (typically school or classroom). All too often these group-level analyses employ only measures of central tendency (such as means and medians, average percentages). But when one's purpose is to understand schooling and depict its consequences, such measures of central tendency can hide important differences in the distribution of pupil performance and educational experiences. Under many circumstances, the distribution of performance from an instructional setting is likely to be as informative about the operation of educational processes as the group's typical performance (Brown & Saks, 1975; Burstein, 1980; Burstein & Linn, 1982; Cooley & Lohnes, 1976; Klitgaard, 1975; Linn & Burstein, 1977; Lohnes, 1972; Spencer, 1983; Wiley, 1970).

The point here is that although a concern for achievement may drive instructional improvement efforts, it is important to keep in

the local school context and be more refined in its objectives. Under usual schooling conditions, a focus on raising the performance level of students around the middle of the overall performance distribution (e.g., say 40th - 60th percentile) will yield the highest gains in mean performance[2]. Yet such a thrust ignores just the segment of students who have the greatest needs. A focus on the performance of the lowest quartile, on the other hand, devotes instructional resources in a manner likely to reduce the spread of performance (by establishing a performance floor or boosting more students over the minimal mastery point). Thus, the multilevel principle that group means do not account for all relevant group-level information should lead to context-sensitive analyses intended to monitor instructional improvement[3].

Examining Spread

The hypothetical data in Table 2 illustrates the value of multiple group-level indicators in simple comparisons of class-level performance. While the students in both classes started at the same level on the pretest and had the same mean performance on the posttest, the variation in posttest performance is much larger for Class 2. Instruction in this class led to differential increments in learning gains (some students learned more than their counterparts at the same pretest performance in Class 1 while others learned less) while the posttest performance patterns in Class 1 reflect a more uniform distribution of learning gains. One needs to know more about the specific circumstances to judge whether one class-level performance profile is to be preferred over the other, but the two profiles are definitely different and should be treated accordingly.

Comparing Distributions

The data reported in Table 3 (taken from Spencer, 1983) illustrate the importance of trying to capture the entire distribution of performance in comparing groups (schools in this case)[4]. If judgments about a school's effectiveness were based on a criterion score of 70, School C would be top ranked (because 20 percent of its students exceeded this score) while School A would be ranked at the top if the cutoff were either 45 or 40. This example might seem far-fetched, but it depicts what can happen when schools are judged by either the number of students taking advanced placement courses or their average SAT score versus judging schools according to the proportion of students passing a state's minimum conpetency or high school proficiency test.

Measuring School Effectiveness by Subgroup Comparisons

Another actual example derives from the recent school effectiveness literature. In his studies, Edmonds (1982) focussed on within-school differences between lower SES and higher SES students in the proportion of students achieving mastery of designated educational objectives. Thus, if a substantial proportion of a designated group within a school performed at the prescribed level or if the differences in proportions achieving mastery were approximately equal, the school was judged "effective". In essence, Edmonds' interest in the antecedents of effective achievement of low-income students caused him to depart from typical practice in school effectiveness studies of concentrating on school mean levels across all pupils.

Characterizing Survey Responses

The last example is taken from the reporting of responses to survey items collected as part of A Study of Schooling (Goodlad, Sirotnik, & Overman, 1979) and later provided as part of a feedback package for a school (Table 4). Considering the student responses in Exhibit A first, the mean response to every item provides little indication of the diversity of feeling expressed by students. A significant number of students strongly dislike each activity, while in the case of "working with the whole class", an equal number strongly like this mode of learning. Students indicated definite preferences that, if reflecting true feelings, dictate against concluding that either it doesn't matter or students are undecided.

A somewhat different point is illustrated by the teacher responses to the organizational problem solving and principal leadership dimensions. The dimensions yielded equal means, but teacher opinions are certainly more divided with regard to their beliefs about principal leadership. The staff cohesiveness dimension exhibits both a higher mean and the virtual absence of "disagreement" responses (only 3% scoring either 1 or 2). The means alone simply cannot capture what these data tell us about teacher perceptions.

There are other studies and other group-level indicators (e.g., Burstein & Linn, 1981; Burstein, Linn, & Capell, 1978; Burstein, Miller, & Linn, 1981) that offer possibilities for improving explanations of the relationships among educational contexts, processes and outcomes. How to adapt at least the logic, and perhaps the methods, of alternative group-level indicators for use in local school improvement activities clearly warrants further consideration.

Instructionally Sensitive Test Analysis

Clearly, the emphasis in test construction, analysis, and interpretation is on individual differences in both classic and IRT psychometric treatments of test data. Yet it would seem that a concern for the sensitivity of test performance to instructional experiences would require test analyses approaches that reflect the organization of instruction and the circumstances in which students receive instruction. There is ample evidence of the substantial variability across classrooms and schools in their content selection, emphasis, coverage, and method of coverage, not to mention the quality of instruction. Under these circumstances, multilevel examinations of the patterns of test performance (at the class and school level in addition to the student level) can be potentially valuable for detecting effects to background differences (e.g., prior learning, socieconomic and demographic differences), instructional coverage and emphasis, and instructional organization (e.g., grouping and pacing effects). When these separate effects can be identified, it may then be possible to construct measures and indices which are sensitive to the context factors of instruction and describe performance accordingly.

We illustrate multilevel appraches to understanding and describing test performance in two ways. First we present a hypothetical example of the hazards of basing interpretations of group (school, class) test performance on horizontal aggregates of many subskills and competencies. This example is followed by a brief report from an investigation of class-level patterns of responses to

test items that, in our view, illustrates what can be gained from a multilevel analysis of patterns of responses to test items.

Aggregating Over Test Content

The proper handling and interpretation of scores aggregated over individuals has received most of the attention in multilevel methods literature. Yet, in several respects, the logic holds as well for the content of instruction and of outcome measures. The choice between an emphasis on basic skills or on a broader array of knowledge has much in common with the decision about which group or level is of interest. Just as a focus on low income students at the school level dictates interest in certain indicators of performance (and perhaps disinterest in others), judgments of the success of school improvement efforts can depend on the chosen level of aggregation over the content of instruction. It can also depend on the form of measurement of the content.

The concept of level of aggregation and measurement of instructional content can be depicted as follows. Following a literal interpretation of the dictums of Title I, School A institutes a strong back-to-basics effort, adding more drill and practice activities (spelling quizzes, timed math drills, memorization and recitation of poems). The additional time School A devotes to these activities is obtained by foregoing most social studies, arts, science, and music instruction. School B, on the other hand, increases enrichment activities and attempts to enhance the breadth of its curriculum through dramatic play in its social studies work (e.g.,

various classes enact political campaigns prior to major elections, operate mock city governments, "live" through the experience of the Pilgrims, etc.). The teachers in School B tie in most lessons in reading, mathematics, and writing with these dramatic assignments but leave little time during school hours for drills on math, spelling and language arts facts.

Schools A and B make clear their instructional preferences. However, unless the array of non-teacher made tests (annual standardized tests, state assessment, district continuum) given in the schools are unusual, aggregate scores from these tests will differentially reflect the instructional emphasis and quality of the two schools. If two-thirds of a test's reading questions were devoted to word identification, vocabulary and spelling and its math questions to basic facts and computations, total test scores might make it appear that School A is more effective because its students uniformly mastered their narrower curriculum material that predominated in total scores, while School B's students performed more inconsistently on their facts and mechanics. (Presumably, School B would do much better on more complex comprehension, reasoning and interpretation material that is covered by a more limited portion of the test.)

Unfortunately, this fictional scenario probably occurs all too often in current efforts to determine the content of instruction and its measurement in school improvement efforts. The premise here is that the level of refinement in distinctions about instructional content should be an explicit choice and the measurement of the consequences of instruction should be sufficiently refined to reflect

both desired and unintended content distinctions. Aggregation over content in the scores from multidimensional tests is potentially hazardous if the intent is to determine what has been taught and how well.

Examining Response Patterns at the Group Level

Examinations of the patterns of students' responses to test items across occasions and across groups (classes, schools, etc.) can be a particularly informative means of deriving explanations of test performance. A reanalysis of selected test item data from the Beginning Teacher Evaluation Study (BETS; Fisher et al., 1978) suggests how response patterns might provide information about instructional differences. Miller (1981, 1984) examined answers chosen by 123 students from 21 fifth-grade classrooms to the 15 items from the fractions subtest on two occasions (prior to (Occasion B) and following (Occasion C) most instruction in this subject area). He classified the test items into four subtopics: adding of fractions, subtracting of fractions, equating fractions, and solving fractions with algebraic unknowns (e.g., X/3 = 6/9. What is X?). Tables 5 through 7 present a subset of Miller's results.

First, the intercorrelations of item performances between classes and among students within the same class (Table 5) clearly indicate the effects of differential topic coverage across classes and within classes. Virtually all of the high item intercorrelations occur in the between-class analysis. This reflects differential coverage of topics across classes. Those classes which taught addition of

fractions also taught subtraction and those classes with high (low) performance on addition also tended to exhibit high (low) performance on subtraction. The classes which taught algebraic unknowns apparently didn't teach (or unsuccessfully taught) addition and subtraction of fractions. On the other hand, there was virtually no intercorrelation among item performance within classes. There was very little tendency for a student to perform well across all items. Different students answered the various questions correctly[5].

Table 6 present results from a selected set of classes with distinctive response patterns. Since time allocated to fractions instruction per week is also reported, it is possible to also speculate as to whether classes received any fractions instruction at all. Note especially the contrasts in performance. For example, classes 8 and 5 had the same posttest score and approximately the same gain, but class 18 did so by covering and mastering every topic except addition of fractions (these students exhibited the same performance pattern at pretest so it is likely that the teacher simply did not check to determine whether students had mastered the mechanics of fraction addition after the pretest.) Class 5 likely depicts the more typical pattern of mastery of simple addition and subtraction of fractions and virtually no other content coverage.

Classes 3 and 16 represent another interesting contrast. These two lowest scoring classes got there in different ways. The teacher in Class 16 devoted a substantial amount of time to the coverage of fractions but virtually all the time seems to have been spent learning

about algebraic unknowns. Class 3 devoted almost no time to the fractions topic (the majority of the class did not attempt to answer the questions at either pretest or posttest.) But there was some differentiated content coverage as a few students in Class 3 mastered all four subtopics.

Table 7 presents information derived from examining the class-level variation in the actual response alternative selected. This analysis clearly suggested systematic differences across classes in the types of errors students made. The two addition-of-fraction items demonstrate that students in several classes apparently never learned not to simply add numerators and denominators. Several classes did not appear to teach the expansion of fractions or taught fraction reduction in such a way that the students did not grasp its flip-side. The algebraic unknowns items exhibit the greatest variety of class-specific confusion. Obviously, some aspect of instruction is responsible for the systematic misunderstanding of how to do this type of problem. It may simply mean that in the absence of instruction on algebraic unknowns, students from a given class facing a novel task (for them) try to apply some other algorithm they have learned.

This example of investigating patterns of test performance barely scratches the surface of modern psychometric work on item response patterns (See, e.g., Harnisch, 1983; Harnisch & Linn, 1981; Sato, 1975, 1980; Sato & Kuto, 1979; Tatsuoka & Linn, 1983), much less recent advances in information processing models for test design and interpretation (e.g., Baker & Herman, 1983; Brown & Burton, 1978;

Birenbaum & Tatsuoka, 1982; Curtis & Glaser, 1983; Davis, 1979; Tatsuoka, 1983). Yet it is clear that the combination of this modern orientation toward test design, better psychometric indices of response patterns, and analyses that take into consideration the levels at which instruction is delivered can provide better information about test performance for decision-makers.

Multilevel Measurement of Educational Processes and Contexts

The principle that the same observable variable can measure different constructs at different levels of analysis is well-established (Burstein, 1980a, 1980b; Burstein, Fischer, and Miller, 1980; Capell, 1981; Cronbach, 1976; Sirotnik, 1979). A few examples serve to emphasize its ubiquity in educational research. Take, for instance, the standard measures of socioeconomic background typically found in studying schools. At the individual level, they may properly convey the parental investment in the individual child's learning. Once aggregated to the school level, social background measures also reflect the community context (e.g., wealth, urbanism, commitment to quality education) which in many cases conditions the resource allocations to schools. Within an educational level, relative social background positions students within a potential status hierarchy (e.g., a big fish in a small pond) That can affect their experiences (Burstein, 1980a, 1980b; Burstein et al., 1980). All three measures of social background may be important in understanding the experiences and performances of students but they do represent distinctly different mechanisms.

In a reanalysis of data from an observational study of the factors influencing student learning, Burstein (1980) demonstrated how the interpretation of a measure of the relative amounts of student learning tasks judged easy changed as the analysis shifted from the student to the class level. Students' success rates in learning tasks at the individual level captured proximal student ability and thus werepositively related to student performance. At the class level, this same observational variable reflected teachers' policies with regard to task difficulty and in many instances exhibited negative relationships with student outcomes.

The problems of change in variable meaning across levels are particularly evident in the literature on organizational and educational climate (e.g., Capell, 1979; Sirotnik, 1979). The distinction between a specific student's perception of classroom climate, which reflects both absolute and comparative aspects of individual personality and perception, and the average perception of the class, a normative measure of the instructional environment, is an important one. Whether the "organizational" or the "psychological" aspect of the climate is most salient in a given context is unclear. Capell (1981), for instance, construed aggregate responses of teachers within schools on scales purported to measure the degree of innovation and teacher influence as indicators of the atmosphere and organizational structure of the school program (See Table 8). In contrast, the individual teacher responses, relative to the responses of other teachers in the school, were interpreted as indicators of the teachers' sense of personal efficacy. That the effects of aggregated

and individual measures on pupil outcomes were opposite in sign and consonant with expectations reinforces the need for a better understanding of how aggregation affects the measurement of program and process characteristics.

The studies cited above are important for our present purposes in two respects. First, they demonstrate the value of multilevel methods in educational research and evaluation. Second, and more importantly, the measures used in these studies -- socioeconomic background indicators, survey responses from students, teachers and parents, classroom observation data -- represent typical information about educational processes and contexts that are or can be gathered in local educational settings. Apparently, these measures can serve as indicators of a variety of constructs -- home resources, community resources, organizational structure and atmosphere, personal efficacy, classroom and school climate, appropriateness of content, student level of functioning -- that are important in understanding and improving schooling when the linkage between the level of aggregation of measures and the construct of interest is clear.

The relevance of these concerns about the shift in variable meaning across levels is particularly pertinent to a variety of investigations of the effects of schooling that a number of local school districts have undertaken. Several school districts have conducted their own studies of school effects (e.g., Kean, Summers, Raivetz & Farber, 1979 (Philadelphia); Ramey, Hillman & Mathews, 1982 (Seattle)) and school effectiveness (e.g., White & Kemp, 1976 (Atlanta); Gastright, 1977 (Cincinnati)). The methodology they employ

mirrors the practices of large-scale investigations of school effects and school effectiveness. The LEA-based studies seem no more nor less resistant to problems in measuring the variables of interest at the appropriate levels, and incorporating them properly in their analyses, than their large-scale, multi-site counterparts (see Burstein, 1980; Madaus, Airasian & Kellaghan, 1980; and Purkey & Smith, 1982 for discussions of methodological problems with these types of studies). If local educational agencies use these investigations to guide their decisions about instructional improvement programs and other school renewal activities, then one would hope that inattention to specific concerns about appropriate level of measurement and its relevance to construct-indicator match would have limited impact.

Analytical Methods for Disentangling Multilevel Effects

Two recent classroom studies of beginning reading demonstrate the value of decomposing the variation of students' instructional experiences and performance into variation associated with subgroups within classrooms. Barr & Dreeben (1983) focussed on content coverage as a variable and found that it varied mainly between reading groups and not between teachers. Not surprisingly, students performance also varied primarily between reading groups.

In the Texas First Grade Reading Group Study (Anderson, Evertson & Brophy, 1979), the focus was on teaching behavior variables such as teachers' selection of students to read (e.g., non-volunteer selections), types of student responses to teacher questions, and

types of teacher feedback. In a secondary analysis of the study data, Martin, Anderson, and Veldman (1980) decomposed the variation in student achievement into effects of teacher behaviors at three levels: students within reading groups, reading groups within classes, and classes. Most of the significant relationships were for students-within-reading groups. Also teachers tended to change their selection strategies across reading groups within their class. An analysis of class means only would have missed the effects of teachers' differential activities across reading groups and the differential impact of teacher behaviors on the members of specific reading groups.

There is no need to provide additional rationale for and describe developments in analytical methods for disentangling multilevel effects. As with the studies of reading, the substantive investigations described in earlier sections typically combined a better conceptualization of the multilevel character of educational data with analytical machinery adapted to the substantive questions of interest rather than molding the theory to meet the conditions of the statistical procedures. Generally, the analytical procedures employed were the familiar ones, but these tools were used in a variety of ways that better mirrored the process of schooling. Typically, better analysis of multilevel educational involve disentangling influences at and within each level of the educational system by conducting multiple analyses or a common analysis with measures collected from (or aggregated to) multiple levels.

Currently, methodological research on methods for analyzing multilevel data is focussing on relatively sophisticated procedures that require stronger assumptions but at the same time, are more robust to typical shortcomings in social science data (e.g., missing data, asymmetrical distributions, measurement error, heteroscedasticity, resistance to outliers. Relevant work is reported in Aitken, Anderson, and Hinde, 1982; Burstein & Gustafsson, in progress; Goldstein, In progress; Mason, Wong & Entwistle, 1983; Rachman & Wolfe, 1983; Schneider & Treiber, 1984. While little of this work will have direct bearing on routine analyses to guide local school improvement, they may provide a better means for re-interpreting results from studies of the effects of schooling in ways that are more consonant with the perceptions of local school personnel. If so, such reanalysis would provide better support for effective local practices and less ammunition for school critics.

Concluding Comments

The value of a multilevel perspective for understanding the effects of schooling is becoming a more commonly held perception across a wide array of educational professionals (researchers, policy makers, and practitioners). We have attempted to illustrate several ways in which such a perspective might lead to more sensitive and sensible data analysis that are better suited to school improvement efforts.

To some degree, our efforts bog down when we attempt to shift from studying and understanding the concept of multilevel analysis and

turn to its practice. School cultures involve a variety of sources of information and a number of constituencies (e.g., teachers, counselors, administrators) with clearly demarcated responsibilities that might be able to use properly collected, appropriately analyzed and routinely accessible information. But little is known about how school building personnel operate in a context with high-quality, timely, pertinent information, either because these conditions do not exist or no one has yet documented how school-level personnel respond under such ideal information conditions. If the other symposium papers are indicative of what is now possible with respect to the use of comprehensive information systems in schools, we won't have to wait very long to determine whether the promise of a multilevel perspective toward the analysis and reporting of school data is real or illusory.

FOOTNOTES

[1]This distinction is a useful one. Individual/clinical uses of information include such activities using test data for individual diagnosis of learning problems, placement decisions, individual student counseling and guidance activities, administrator supervision of individual teachers and similar individual personnel matters (hiring, course asignments, promotions, etc.). Group/social/organizational uses refers to the myriad of ways in which data from individuals are aggregated and organized to characterize/depict/understand the functioning and behavior of groups of individuals. Class-level test performance and background profiles, subgroup (e.g., by ethnicity, sex, grade-level, curriculum track, SES) information; course enrollment and course-taking patterns across subject matters and subgroups of students are all examples of the latter. Most of the analytical developments pertinent to this paper deal with the latter type of use.

[2]There are both substantive and technical reasons for this. Substantively, students at higher percentile levels have a low ceiling; that is, much of the new material they might learn is not likely to be reflected in substantial improvements in the test performance because this material typically is not well-represented on the test. Low performance, on the other hand, may require substantial resources to boost performance above, say, the 50th percentile and thus draw off resources from students in other parts of the distribution. For example, concentration on the skills needed by low

performers may lead to more wait time and inefficiency for high performers (unless the latter are allowed to "work ahead on their own"). Performers in the middle of the distribution are likely to benefit from the focus because they have sufficient room to grow and may simply require a bit more targeted instruction to clear up certain misconceptions (see later example about fraction addition) or to acquaint them with topics not previously covered.

The technical side of the argument is the well-known relationship between raw score points and percentiles. It takes more raw score change to move up a given number of percentile points in the tails than in the middle of a normal distribution. Thus gains in knowledge in the middle of the distribution boost the average percentile more rapidly than gains in either the upper or lower tails.

[3]One does not have to be devoted to compensating for the inadequate performance of low income pupils to derive benefits from interest in the distribution of performance rather than simply its level. In their annual reports, the California Asessment Program provides schools with the quartile distributions of the performance of 3rd grade students along with a variety of mean indicators (overall and for various demographic subgroups). A former principal of a suburban, typically higher performing school pointed out that while the school's overall performance each year (typically above 70 per cent correct, which is above the 90th percentile statewide) didn't tell him anything, he did keep track of the number of children that fell in the lower quartile each year because this meant that there were still

students who needed to improve. Thus, even high achieving schools can benefit from an awareness of the functioning of their weakest students and school mean performance doesn't typically capture this type of information.

[4]Spencer's paper (1983) considers a number of statistical problems associated with the typical use of test scores for comparisons of outcome differences among groups. He highlights the problems associated with the ordinal properties of most metrics used to measure outcomes and presents a case for switching to indices of "stochastic ordering" when attempting such comparisons. This shift would certainly be in the direction of maintaining more distributional information in group-level analyses.

[5]The exceptions to the lack of correlation across items within classes are typically for those items that are essentially parallel (e.g., items 1 and 2; item 6 and 7; and items 11, and 13) or involve analogous straightforward topics such as addition and substraction items containing a common denominator.

Table 1

The Types of Information Routinely Collected
(or collectable) in School Districts

A. Demographic/Archival

1. Student demographics--age, sex, ethnicity, home language, parental occupations and employers, eligibility for AFDC, reducted price lunches, medical histories, home address, mobility (how long in particular residence) parental education, family size
2. Teacher and building-level administrator backgrounds -- age, education, previous employment and educational history, special certification and subject-matter expertise
3. School building characteristics -- information about physical plant (e.g., age, capacity, particular resources),
4. Student body and community composition--ethnic composition, neighborhood wealth, community involvement in neighborhood schools (e.g., PTA membership)

B. Financial

5. Payroll expenditures
6. Materials and supplies
7. Equipment
8. Maintenance
9. Special programs (e.g. entitlement programs, staff development, remedial services, counseling and guidance)
10. Transportation
11. Safety and Security

C. Testing

12. Standardized norm-referenced tests
13. Criterion referenced testing
14. Minimum competency and proficiency testing
15. Group and individual ability and aptitude testing -- done typically to determine pupil eligibility for special programs and placement decisions
16. Teacher-made tests and curriculum embedded tests

D. Program Characteristics and Participation

17. Special program participation -- availability and staffing of special programs at local school sites
18. Curriculum information -- curricular packages and texts used in classrooms, topic coverage from continuum (assumed and measured)
19. Course taking patterns -- information from student cummulative records and from prescribed offerings
20. Grading practices -- teacher reports of student grades

E. Student Performance, Participation, and Behavior

21. Grades by content area
22. Participation in extracurricular activities by types
23. Awards -- e.g., scholarships
24. Absenteeism and tardiness
25. Reported disruptive and inappropriate behavior

F. Affective, Attudinal, and Observation Information

26. Student responses to surveys about class and school environments and other aspects of their educational experience
27. Teacher measures of classroom and school climate and activities
28. School building administrator measures of school climate and activities
29. Parental surveys of perceptions and support of school activities
30. Parental participation in school activities (e.g., volunteers, fundraising attendance at school functions, scheduled conferences)
31. Administrator observations and evaluations of teachers
32. Teacher observations of other teachers
33. District personnel's observation and interviews of building personnel
34. Surveys of graduates to determine occupational and educational status
35. Information about student dropouts

G. District Evaluation Reports

36. Routine annual reports to board and federal and state agencies

37. Evaluation of specific educational changes

38. Instances of local school assistance by type and disposition

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6 Source Burstein, L. The Use of Existing Data Bases in Program Evaluation and School Improvement (1983)

Table 2

Hypothetical Test Results For Two Classes with Equal Pre-and Posttest Means, Equal Prestest Variances, but Unequal Posttest Variances

Test score	Pretest Frequencies Class 1	Class 2	Posttest Frequencies Class 1	Class 2
7	0	0	0	3
6	0	0	2	3
5	2	2	6	4
4	6	6	9	5
3	9	9	6	4
2	6	6	2	3
1	2	2	0	3
0	0	0	0	0
Means	$\bar{X}_{.1} = 3$	$\bar{X}_{.2} = 3$	$\bar{Y}_{.1} = 4$	$\bar{Y}_{.2} = 4$
Standard Deviations	1.08	1.08	1.08	2.17

Source: Burstein, L. & Linn R.L. Analysis of Educational Effects from a Multilevel Perspective:Disentangling Between- and Within-Class Relationships in Mathematics Performance, CSE Report No. 172, University of California Los Angeles, Center for the Study of Evaluation, 1982

Table 3 . Percent of Students Scoring at Least X

School	Score x				
	40	45	50	55	70
A	90	80	60	50	10
B	85	75	55	48	14
C	83	70	65	48	20
D	71	60	40	20	3
⋮	⋮	⋮	⋮	⋮	⋮

Source: Spencer B. D. On interpreting test scores as social indicators: Statistical considerations, Journal of Educational Measurement, 1983, 20(4), 317-334.

Table 4

Examples of Responses to Survey Items where Mean response is insufficient to reflect distribution of responses.[a]

Exhibit A— Responses of 26 students from a single secondary school class

	Percentage of students responding...				
	Like very much	Like somewhat	Dislike somewhat	Dislike very much	Mean
Working with the whole class	23	38	15	23	2.4
Tell in my own words what I have learned.....	04	23	31	42	3.1
Do word problems.....	04	54	19	23	2.6
Do research and write reports.....	04	23	31	42	3.1

Exhibit B— Responses of 34 teachers from a single school to items measuring teachers perceptions of the work environment. The 77 items were combined into 3 scales (dimensions of the work environment) which were labeled "organizational problem solving", "principal leadership" and "staff cohesiveness". Items were answered on a six-point agreement scale and the school mean and distribution of teacher scores (average response to items from a given dimension) are reported below:

Dimension	Mean	Teacher Distribution (%)					
		1	2	3	4	5	6
1. Oranizational Problem Solving	3.4	3	12	41	29	12	3
2. Principal Leadership	3.4	12	18	24	26	9	12
3. Staff Cohesiveness	3.7	0	3	44	35	15	3

[a] Data and questions taken from an example feedback package from A STudy of Schooling (Goodlad, Sirotnik et. al.) which also appeared as Appendix B in Sirotnik & Burstein (1983).

Table 5

Item intercorrelations between classes (lower triangle) and within classes (upper triangle) on occasion C.

	Subtraction					Addition					Equating			Algebraic Manipulation	
ITEM	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1		.75	.07	.33	-.03	.51	.29	.09	.01	.23	.23	.21	.22	.26	.20
2	.86		.00	.29	-.08	.54	.33	.07	-.00	.16	.19	.12	.02	.29	.18
3	.19	.28		.30	.06	.17	.29	.26	.25	.23	.29	.03	.05	.16	.06
4	.62	.53	.50		.03	.25	.30	.23	.22	.19	.28	.05	.15	.40	.26
5	.43	.41	.36	.39		-.15	-.00	.37	.40	-.01	.19	.18	.19	.16	-.01
6	.68	.42	.34	.43	.27		.69	.14	.15	.36	.19	.08	.07	.05	.19
7	.52	.29	.55	.48	.38	.86		.29	.25	.50	.19	.16	.08	.16	.18
8	.49	.29	.30	.48	.42	.66	.64		.67	.24	.35	.29	.23	.35	.20
9	.53	.37	.33	.45	.69	.64	.59	.75		.19	.21	.24	.16	.23	.24
10	.56	.28	.05	.40	.49	.61	.62	.53	.69		.12	.06	.13	.04	.23
11	.55	.45	.33	.56	.64	.42	.45	.47	.58	.51		.50	.39	.27	.23
12	.41	.37	.60	.74	.52	.26	.38	.57	.41	.23	.69		.38	.29	.35
13	.50	.51	.19	.45	.60	.26	.16	.59	.51	.29	.56	.69		-.17	.29
14	.18	.07	-.07	.36	.31	-.10	-.12	.41	.35	.12	.47	.50	.55		.37
15	.29	.18	-.05	.33	.39	.10	.08	.48	.53	.33	.64	.48	.49	.81	

Source: M.D. Miller, Item Response and Instructional Coverage, 1984.

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Table 6

Classrooms exhibiting distinctive class-level patterns of performance on fraction items.[a]

Class #	Allocated Time Mean[b]	Allocated Time Rank[c]	Posttest Mean[d]	Posttest Rank[e]	Gain Mean[f]	Gain Rank[g]	Nature of the item response pattern
18	119	1	7.5	10.5	5.0	7	Mastered equating, algebraic manipulation, and simple subtraction. Only problem at posttest was addition of fractions (adding numerator and denominator) where only 2 correct out of 30 responses (6 students responding to 5 items).
5	77	5	7.5	10.5	5.2	5	Students can do simple addition and subtraction items but not more complicated ones. No work on equating. Some coverage of algebraic manipulation but basically don't understand the concept.
27	114	2	12.5	1	6.5	1	No problems at posttest except on algebraic manipulation.
12	87	4	11.3	3	6.3	2	Most mastered everything but 1 or 2 didn't master any fraction topic (possible differential coverage).
11	77	6	12.3	2	1.7	15	Lots of time spent on fractions with not much new learning, at least on the topics measured by the test.
8	26	14	9.0	7	5.6	3	Success on topics covered (subtraction, equating, simple addition). Addition other than simple common denominator mislearned or not taught.
26	46	10	6.4	13	5.0	7	Fraction curriculum at low level. Most learned only addition and subtraction with common denominator. One or two students learned more.
14	29	12	5.3	15	3.7	9	Differentiated teaching and learning. Some mastered everything, some mastered addition and subtraction with common denominator, others mastered (probably covered) nothing.
16	52	7	2.8	21	1.5	16.5	Students in this class only mastered algebraic manipulation. They did not answer any other questions on either pretest or posttest (with one or two exceptions).
3	3	19	4.8	20	3.3	10.5	Differentiated content coverage, almost all on algebraic manipulations. some students mastered most topics.

[a] Based on scores of 123 fifth graders from 21 classrooms in the Beginning Teacher Evaluation STudy. These analyses are reported in Miller (1984).

[b] minutes per week spent on fractions during period between pretest and posttest.

[c] Based on ranking of mean time allocated to fractions across the 21 classrooms.

[d] Based on posttest average for a sample of approximately 6 students from each class. Maximum possible score was 15.

[e] Based on ranking of mean achievement score at posttest for the 21 classes.

[f] class mean difference between total scores at the pretest and posttest.

[g] Based on ranking of the mean gains for all 21 classrooms.

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Table 7

Test Items exhibiting distinctive class-level patterns of student performance*

Question	Alternatives	Nature of the Response Pattern
$5\frac{5}{8}$ $-\ 4\frac{1}{4}$ Pretest p-value=.11 Posttest p-value=.35	$1\frac{3}{8}$ $1\frac{4}{8}$ 2 $1\frac{4}{12}$	As students learned about subtracting fractions, many did not learn how to obtain a common denominator before subtracting. This resulted in some classes systematically choosing alternative 2, probably because they had been taught how to handle fractions with a common denominator (occurred in 5 classes at posttest). 3 classes exhibited mastery at posttest.
$\frac{2}{3}+\frac{1}{3}=$ Pre p-value =.11 Post p-value=.26	$\frac{3}{6}$ 3 $\frac{2}{9}$ 1	The most common error for both questions is adding both the numerator and denominator. This problem was not resolved at the posttest for several classes (9 classes on the first item, 13 on the second). Both questions require change to mixed fractions which students in many classes apparently were not taught.
$\frac{3}{7}+\frac{5}{7}=$ Prep-value = .07 Post p-value=.24	$\frac{28}{35}$ $\frac{8}{14}$ $1\frac{1}{7}$ $\frac{4}{7}$	Four classes exhibited mastery of the first item and 2 classes exhibited mastery of the second item at posttest
$\frac{1}{2}=$ Pre p-value = .32 Post p-value= .55	$\frac{2}{3}$ $\frac{3}{6}$ $\frac{2}{5}$ $\frac{4}{9}$	Students in some classes could not expand fractions at the posttest (5 classes on each item). They simply added 1 to both numerator and denominator.
$\frac{2}{3}=$ Pre p-value = .15 Post p-value= .32	$\frac{8}{12}$ $\frac{3}{4}$ $\frac{3}{9}$ $\frac{5}{6}$	8 classes mastered the first item at posttest and 2 classes exhibited mastery of the second item.
What does N equal? $\frac{2}{7}=\frac{N}{21}$ Pre p-value = .20 Post p-value= .33	3 16 7 6	Lots of class-specific confusion. Only 1 class exhibited mastery. Four classes systematically chose alternative 1, 2 classes systematically chose alternative 2 and 1 class systematically chose alternative 3 at the posttest. 9 classes mastered the somewhat easier item 3/8 = 6/N (posttest p-value =.53) with only limited systematic errors.

*These are test results from selected fraction items given to 123 students in 21 fifth grade classrooms before and after instruction on this topic(in most classes). The data were collected as part of the Beginning Teacher Evaluation Study (Fisher et. al., 1978). The results reported here are based on a dissertation by Miller (1981) and are reported more thoroughly in Miller (1984).

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Table 8 REGRESSION OF CLASS LEVEL STUDENT READING ACHIEVEMENT ON TEACHER AND MINISCHOOL LEVEL SURVEY VARIABLES[a,b]

Variable Name	Multilevel Regression		Class Level Regression
	Teacher Level	Minischool Level	
Staff Cohesion	-.225 (.487)	.679 (.849)	.197 (.536)
Common Minischool Policies	-.336 (1.445)	.360 (1.155)	-.057 (.371)
Teacher Autonomy	1.652 (1.601)	-2.256 (1.323)	.563 (.696)
Teacher Influence	.660 (1.714)	-1.330 (2.292)	-.135 (.508)
Principal Influence[c]	.545 (1.518)	-.961 (1.843)	.004 (.000)

[a]Unstandardized regression coefficients, t statistics in parentheses.

[b]The regression equation was estimated using the method of weighted least squares:

$$\underset{\sim}{\beta} = \{W'(X'X)W\}^{-1} W'X'y\underset{\sim}{W} ,$$

where

$$\underset{\sim}{W} = tr(n_i)^{-1}kn_i = N^{-1}kn_i ;$$

$\underset{\sim}{\beta}$ is the vector of regression coefficients; $\underset{\sim}{X}$ is the matrix of independent variables; k is the number of classes; N is the total number of students; and n_i is a diagonal matrix of class sizes. Use of the matrix $\underset{\sim}{W}$ insures that each classroom in the analysis will be weighted by the number of students contained in it, while the overall degrees of freedom for classes will be preserved.

[c]This variable was measured such that a negative coefficient represents greater influence.

Source: Capell, F.J. A study of alternatives in American education, Volume VI: Student outcomes at Alum Rock 1974-1976, R-2170/6-NIE, Santa Monica, CA: Rand Corporation, July 1981.

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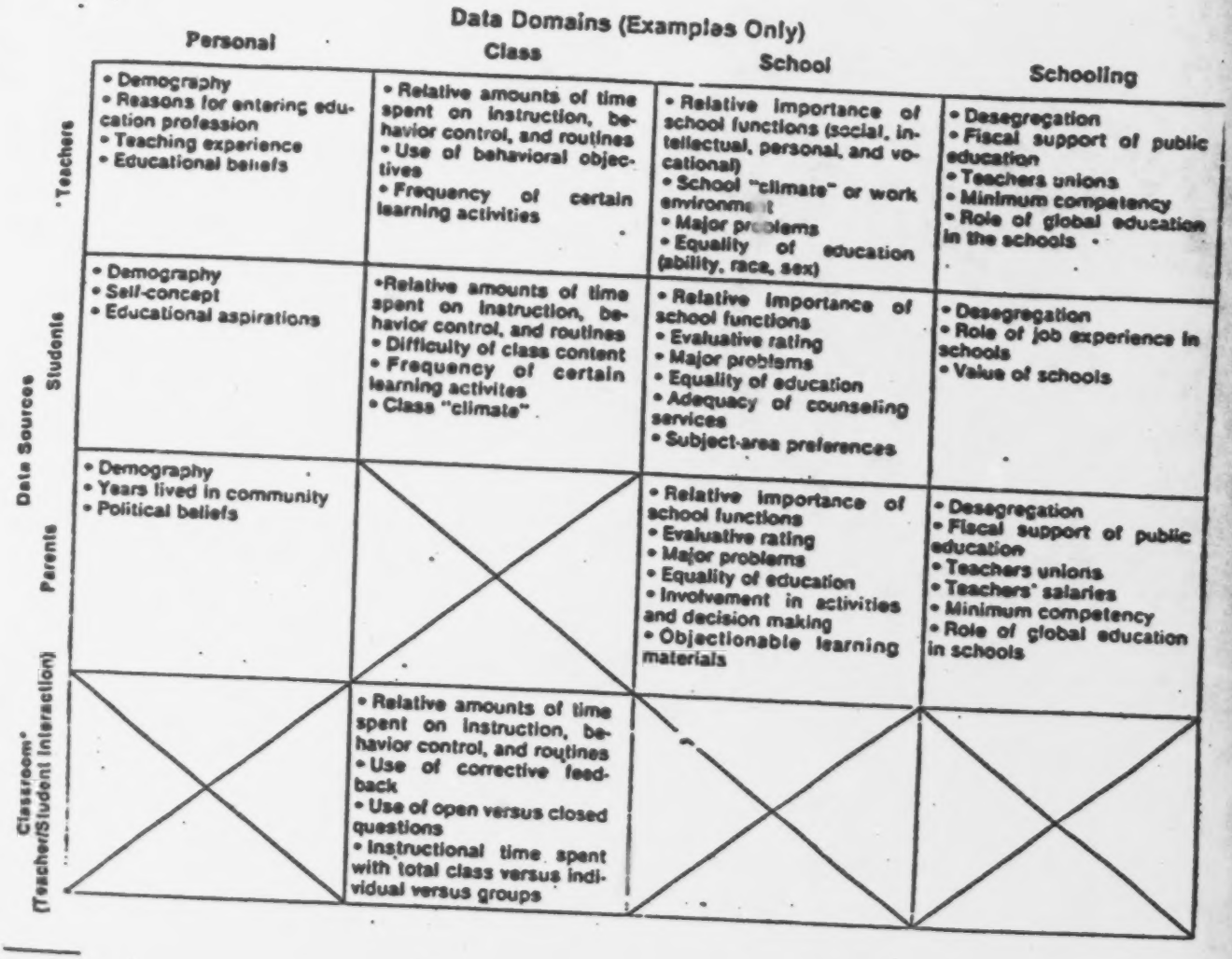
Data Domains (Examples Only)
Personal
Class
School
Schooling
Data Sources
Teachers
Students
Parents
Classroom* (Teacher/Student Interaction)
• Demography
• Reasons for entering education profession
• Teaching experience
• Educational beliefs
• Relative amounts of time spent on instruction, behavior control, and routines
• Use of behavioral objectives
• Frequency of certain learning activities
• Relative importance of school functions (social, intellectual, personal, and vocational)
• School "climate" or work environment
• Major problems
• Equality of education (ability, race, sex)
• Desegregation
• Fiscal support of public education
• Teachers unions
• Minimum competency
• Role of global education in the schools
• Demography
• Self-concept
• Educational aspirations
• Relative amounts of time spent on instruction, behavior control, and routines
• Difficulty of class content
• Frequency of certain learning activites
• Class "climate"
• Relative importance of school functions
• Evaluative rating
• Major problems
• Equality of education
• Adequacy of counseling services
• Subject-area preferences
• Desegregation
• Role of job experience in schools
• Value of schools
• Demography
• Years lived in community
• Political beliefs
• Relative importance of school functions
• Evaluative rating
• Major problems
• Equality of education
• Involvement in activities and decision making
• Objectionable learning materials
• Desegregation
• Fiscal support of public education
• Teachers unions
• Teachers' salaries
• Minimum competency
• Role of global education in schools
• Relative amounts of time spent on instruction, behavior control, and routines
• Use of corrective feedback
• Use of open versus closed questions
• Instructional time spent with total class versus individual versus groups

*Data were collected on this data source through observation. For the purposes of this conceptualization, observers are being treated not as a data source, but as part of the data collection *method*, just as questionnaire and/or interview methods were used in collecting data from teachers, students, and parents.

Figure 1

The Schooling Terrain: Map One

SOURCE: Goodlad, Sirotnik & Overman, 1979

DATA DOMAINS

AGGREGATION LEVELS	Data Sources:	Personal (Individual) C	Personal (Individual) A	Personal (Individual) M	Instructional (Classroom) C	Instructional (Classroom) A	Instructional (Classroom) M	Institutional (School) C	Institutional (School) A	Institutional (School) M	Societal (Schooling) C	Societal (Schooling) A	Societal (Schooling) M
Individual	Students Teachers Administrators Parents												
Class	Students Teachers Administrators Parents Classroom												
School	Students Teachers Administrators Parents Classrooms School												
District	Students Teachers Administrators Parents Classrooms Schools District												

Data Categories:

C = Circumstances

A = Activities

M = Meanings

Figure 2

The Schooling Terrain: Map Two

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Source: Sirotnik K. & Burstein L. Systemic Evaluation, Los Angeles: University of California Los Angeles, Center for the Study of Evaluation, October 1983.

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USING VS. BEING USED BY SCHOOL INFORMATION SYSTEMS

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For the past dozen years, I have spent most of my professional work life thinking about, writing about, and using comprehensive data bases on schools and schooling. About two thirds of this time was spent working with John Goodlad and my other colleagues on A Study of Schooling--a study that attempted to develop a comprehensive, data-based description of what goes on in schools and how people feel about it--all in an effort to draw some working hypotheses about how things might happen differently (Goodlad, 1983). More recently, a few colleagues and I at the Center for the Study of Evaluation and at the Laboratory in School and Community Education have paused to reflect upon the role of comprehensive data-bases, less from the standpoint of doing a research study across schools, and more with an eye towards how information can be used for local school improvement and change.[1]

I note this brief, personal history only to support my commitment to the whole idea of comprehensive, school-oriented information systems. Yet as excited as I am about the potential use of the idea, I am worried about the potential of its abuse. It seems increasingly clear to me how people can use school information systems. And it seems increasingly clear how such systems can use people. If the latter turns out to be more the rule than the exception, I will be looking to become involved in a different line of educational inquiry.

To be more specific about my worries, I would like to divide the subsequent remarks into three categories: 1. inquiry and the role of information, 2. humanizing data, and 3. accountability vs. responsibility.

The first category is really preeminent with the latter two categories being corollaries of the position being taken on information systems.

Inquiry and the Role of Information

At the outset, it is important to clarify the perspective underlying the kind of "information system" that I and my colleagues have envisioned. We would not characterize it as a district-driven, "management information system" exclusively (or nearly exclusively) oriented around monitoring achievement, i.e., norm- and/or criterion-referenced test score results. Rather, what we have in mind is more of a school-based, inquiry-driven system of information to be collected and used formatively in the process of school improvement.

It is virtually impossible to do justice to the ideas embedded in this view of information system in this short report. My hope is that those of you interested in these ideas well look at the reports referenced in this paper. All I can do here is summarize in shot-gun fashion some core concepts:

1. Outcome indices have limited value, beyond their immediate, descriptive signal, for helping direct an agenda for school improvement. Certainly I am not suggesting that assessing student achievement is unnecessary. Rather, I am suggesting that test scores alone are an insufficient basis for action.

2. What is further necessary is relevant information on the circumstances, activities and meanings associated with the schooling process. By "circumstances," I mean the whole array of structures, situations, and physical features in the school (condition of building, teacher-student ratio, student tracking policy, materials and resources, and so forth). By "activities," I mean the behaviors and processes that constitute the practice of schooling (staff decision-making, classroom teaching strategies, student socialization patterns and so forth). By "meanings," I mean the understandings that people infer from and bring to bear upon schooling (orientations like feelings, opinions, attitudes, beliefs and values are included here as well as any other indicators of meaning--test scores for example).

3. The criteria for relevance are based upon the perceived needs of the significant "actors" in the setting (e.g., administrators, teachers, students, parents) and the inherent value systems through which these perceptions are filtered.

4. Information systems, as knowledge producing and using processes, must reflect the variety in:

   a. types of information, e.g., cognitive, affective, contextual.

   b. commonplaces (Goodlad, 1979) of schooling, e.g., physical environment, human resources, material resources, organization, communication, problem-solving/decision-making, leadership, issues/problems, controls/restraints, expectations, climate, and curriculum. Curriculum is to be interpreted broadly and should include at least these additional commonplaces: goals/objectives (academic, personal, social, career), content, instructional materials, classroom activities, teaching strategies, assessment of student learning, use of time and space, and grouping strategies.

   c. domains of information, e.g., individual, class, team/grade/department, school, district, community.

   d. sources of information, e.g., students, teachers, administrators, parents, observers, documents.

   e. methods for collecting information, e.g., tests, surveys, observations, interviews, case studies, historical analyses, document reviews.

I have tried to pack most of these features into Figure 1 which is offered as a heuristic for suggesting the depth and breath of potential school information. (Note also that Figure 1 represents just one slice out of many possible along the pre-school, K-12, post-secondary continuum.)

With these concepts as a backdrop, I can now be more explicit regarding the theme of this paper: people using or being used by information systems. There is a fifth and most important concept to be added to the above list:

5. Information systems, as knowledge producing and using processes, must be multi-paradigmatic, embracing the tensions between these alternative inquiry perspectives:

   a. Empirical analytic methods that place a premium on explanation via predictive relationships between quantified constructs.

   b. Naturalistic/phenomenological methods that place a premium on understanding via qualitative interpretations of social settings.

c. Critical/dialectical methods that place a premium on informed discourse, values clarification, and action.

Thus, a district or school seriously bent upon sustained improvement and change efforts will need to involve school staff in the collaborative pursuit of understanding--What goes on in their school(s)? How did it come to be that way? What are the social, political and economic interests that constrain the setting? Reconciling the various phenomenological views of the setting and approaching a working consensus on problem areas should always the first order of business. As the dialogue proceeds, it will become evident that much information is needed--information that can be determined through various operational devices (e.g., surveys, tests, observations) or information that is already available (e.g., school records) but needs to be organized and disseminated. Only when information is perceived as useful, should information systems be conceived for use.

To summarize, information as knowledge is not an end in itself but is, instead, a catalyst for evaluative discourse and action; inquiry and information need to be legitimized as natural and on-going parts of the daily work life of those for whom the knowledge is to be relevant.

Humanizing Data

Many professional and lay persons both inside and outside of the educational research and schooling communities have never been enamored with the notion of quantifying the meaning of circumstances and events in social settings. To exacerbate matters further, the exponential rise of high technology has propelled us into an "age of information." The only way to escape being "computerized" is to disenfranchise oneself from economic life. My guess is that these societal changes, coupled with past sentiments regarding "research-type" activities, will make those people

identified as potential data sources even less sanguine--and more cynical and suspicious--regarding the benefits of the kind of comprehensive information systems being described.

Picking up on the theme from the previous section, a crucial ingredient required to overcome this concern is the cultivation of an attitude towards information that makes it an intrinsic part of an organizational environment that legitimizes professional inquiry by allocating quality time to the effort. But there are a few other, more mundane ingredients having to do with attitudes toward and techniques of measurement and data analysis.

Perhaps the most important problem in measurement is to overcome two kinds of attitudes that tend to polarize people into either of two belief "camps," described by Kaplan (1964) as adherents of either the "mystique of quantity" or the "mystique of quality." The extreme position in the former camp is embodied in the expression, "If you can't measure it, that ain't it." And the opposite extreme in the latter camp--"If you can measure it, that ain't it."

As with all false dichotomies, the truth is somewhere in between and is rooted pragmatism. It is unreasonable to believe that the mathematical power inherent in numbers somehow transcends the strength (or weakness) of their connections with properties they are presumably measuring. It is equally unreasonable to assume that numbers assigned to reified concepts (such as "self-esteem" and "principal leadership") cannot possibly represent anything meaningful.

The ultimate arbitrator of the meaning of measurement is experience. This is why the notions of reliability and validity were invented. To the extent that the numbers (i.e., measurements) can be replicated, they are reliable. More importantly, to the extent that they serve the measurement

purposes intended, they are valid. The key word here is purpose. Depending upon the purpose, the evidential arguments for reliability and validity may differ.

Consistent with the primary objective being espoused here for collecting and using data--to inform and stimulate staff inquiry--evidence must be acquired first for the content validity and second for the credibility of information. Content validity is a familiar concept to most people who construct achievement tests. It is essentially a rational process of matching item content to instructional content, i.e., the course (or unit or lesson) objectives and the skills, knowledge, and understandings implied by those objectives. Likewise, the items in surveys, interviews and observation schedules must be matched to the content they are designed to assess. A concept such as "staff cohesiveness" may be of important concern to the organizational work environment in a school. But within the context of that school, a concept like "staff cohesiveness" needs to be scrutinized for its various meanings. Does it represent support? friendliness? trust? respect? morale? commitment? unity? etc.?

The term "credibility" as a type of validity is used here to represent the degree to which information augments, stimulates, provokes or otherwise facilitates meaningful communication between staff in the inquiry process. Assessing credibility can only be done by the staff during the course of inquiry. Suppose the issue of increasing parent involvement in school affairs is under deliberation. Suppose the results of a parent survey question regarding the reasons they have for feeling disenfranchised from school affairs are added to the information being brought to bear on the inquiry. If the results lead to a "so what?" response or an inability to relate the data to the pertinent issue, it us unlikely that the item will

be included in further surveys. On the other hand, if the results can be seen to further the dialogue, the item has proved credible. (See example below for Nuvo Elementary School). The point here is that issues pertaining to the validity of information are not exclusively those facing psychometricians. These issues must be continually addressed as people attempt to make sense out of the information collected.

This leads, then, to the kinds of data analyses likely to be of use to staff for facilitating their inquiry about the conditions of their schools and the possible avenues for improvement and change. It is unlikely that the results of multivariate analyses such as multiple regression, covariance structure modelling, and the like, will be of use in this effort. Obviously, such analyses can be useful for research purposes in studying complex relationships between variables and how they change over time. Yet, they lack the immediacy and simplicity required to inform staff deliberation on specific problems and issues.

But do not confuse simplicity with simple-mindedness. The myth that complex numerical manipulations somehow yield better, more "scientific" results has no place in the rationale for a "people-oriented" information system. The power of a single percentage should not be underestimated as a stimulus for facilitating and advancing the dialogue. A brief summary of the events of a staff meeting at one elementary school should illustrate how simple tabulations of data can facilitate staff inquiry.

> A continuing issue at Nuvo Elementary School concerned curriculum balance and the role of content area specialists. Prior to this meeting it had been suggested that staff really didn't know how much time was being devoted to various subject areas in each grade level. As an approximation to this bit of missing knowledge, staff responded to a question asking for the approximate, weekly number of hours allocated to a number of subject area divisions. Since teachers at this school taught in 10 teams (of 2-3 teachers each) spread across

grade levels, teams (rather then individuals) reached consensus on this item; and the 10 team responses were arrayed and presented as input to the staff meeting.

Preliminary discussion began around the nature of the item itself and the difficulty of cutting up the hours of the day to correspond to the subject matter categories. Thus, to some extent, the hours indicated by teams were not realistic. Yet, all teams felt that the general patterns in the data "rang true." These patterns were two-fold: (1) There were extreme imbalances in the time allocated to different content areas and (2) The nature of those imbalances were very different in different grade levels and teams. These observations fed back nicely into the major thrusts of the issue. First, what ought be the curricular balance between subject contents, should it be different at different grade levels, and, if so, how can balance be maintained in the continuum from one grade level to the next?

But the original criticism of the survey question really highlighted a second thrust. How separable are content areas, and to what extent do we (and should we) teach subjects (e.g., reading, math and science) together as they naturally occur within a thematic unit (e.g., ecology)? This query, of course, raised the role of content specialists as being "outside class" resources versus being regular members of a team with special talents that can be shared with other staff as needed.

This is enough of a scenario to make the point regarding how simple (not simplistic) survey results can facilitate inquiry. It should also be noted that content validity and credibility issues were implicit in this scenario and could be made explicit during the course of the inquiry.

Responsibility vs. Accountability

Teachers, students, parents, etc. have been "burned" far too often by mindless exercises of data collection (usually surveys), the results of which never see the light of day or, if they do, are presented in a useless form, in a useless setting, and/or at a useless time. Even worse, however, are the scars left from using information as a weapon, often under the rubric of accountability. Most often, the arsenal is composed of test score information, but I have verified "war stories" where other types of information (e.g., teacher educational values/beliefs; instructional practices; etc.) have been used against people (e.g., RIF decisions).

I find this attitude towards and use of information to be intolerable. It is not surprising, then, that it is wholly incompatible with the view being espoused here of information systems as an adjunct to and by-product of a school-focused inquiry and change process. From this perspective, "evaluation is no longer a tagged-on prerequisite; it is intrinsic to the reflective process and is engaged in by all involved. "Accountability" is recast to a higher ethical level; people become accountable to one another rather than to what are often seen as arbitrary, outside interests. Responsibility would seem to be a more reasonable term to characterize this view of inquiry and the use of information.

Summary

There are at least three issues that must be taken seriously by information system advocates if the systems are to be used by and for people instead of against them:

1. Intimately involving people in developing the purposes, contents and uses of the systems.
2. Developing timely, relevant and straightforward techniques for bringing information to bear upon practice.
3. Creating a climate of mutual trust and responsibility for generating and using information.

Footnote

1. The following reports provide a more thorough discussion of all the concepts embedded in this paper: Sirotnik, 1984; Sirotnik and Burstein, 1983; Sirotnik and Oakes, 1981 and 1983.

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DATA DOMAINS

AGGREGATION LEVELS	Data Sources:	Personal (Individual) C	Personal (Individual) A	Personal (Individual) M	Instructional (Classroom) C	Instructional (Classroom) A	Instructional (Classroom) M	Institutional (School) C	Institutional (School) A	Institutional (School) M	Societal (Schooling) C	Societal (Schooling) A	Societal (Schooling) M
Individual	Students												
	Teachers												
	Administrators												
	Parents												
Class	Students												
	Teachers												
	Administrators												
	Parents												
	Classroom												
School	Students												
	Teachers												
	Administrators												
	Parents												
	Classrooms												
	School												
District	Students												
	Teachers												
	Administrators												
	Parents												
	Classrooms												
	Schools												
	District												

Data Categories:

C = Circumstances

A = Activities

M = Meanings

Figure 1

The Schooling Terrain

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